This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.025 MGD wastewater treatment plant with future expanded tiers of 0.0395 and 0.10 MGD. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1.	Facility Name and Mailing Address:	Culpeper Industrial Airpark WWTP 118 West Davis St, Ste 101 Culpeper, VA 22701	SIC Code :	4952 WWTP
	Facility Location:	13281 Airpark Drive Culpeper, VA 22701	County:	Culpeper
	Facility Contact Name:	Jonathon Weakley	Telephone Number:	(540)727-3409
	Facility E-mail Address:	jweakley@culpepercounty.gov		
2.	Permit No.:	VA0068586	Expiration Date of previous permit:	August 1, 2016
	Other VPDES Permits associated with this facility:		VAN020138	
	Other Permits associated with this facility:		None	
	E2/E3/E4 Status:	Not Applicable (NA)		
3.	Owner Name:	Culpeper County		
	Owner Contact/Title:	Paul Howard Director of Environmental Services	Telephone Number:	(540)727-3409
	Owner E-mail Address:	phoward@culpepercounty.gov		
4.	Application Complete Date:	December 21, 2015		
	Permit Drafted By:	Alison Thompson	Date Drafted:	3/31/2016
	Draft Permit Reviewed By:	Anna Westernik	Date Reviewed:	4/7/2016
	Public Comment Period :	Start Date: 5/16/2016	End Date:	6/15/2016

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination

Receiving Stream Name :	Hubbard Run	Stream Code:	3-HUB
Drainage Area at Outfall:	0.483 sq.mi.	River Mile:	2.30
Stream Basin:	Rappahannock	Subbasin:	None
Section:	4	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-E08R/RA18
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
30Q10 Low Flow:	0.0 MGD	30Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law	X	EPA Guidelines
X	Clean Water Act	X	Water Quality Standards
X	VPDES Permit Regulation		Other (PES, Occoquan Policy, Dulles)
X	EPA NPDES Regulation		

7. Licensed Operator Requirements: No operator requirement at 0.025 MGD
Class III – 0.0395 and 0.10 MGD

8. Reliability Class: Class II

9. Permit Characterization:

	Private	X	Effluent Limited		Possible Interstate Effect
	Federal	X	Water Quality Limited		Compliance Schedule Required
	State		Whole Effluent Toxicity Program Required		Interim Limits in Permit
X	POTW		Pretreatment Program Required		Interim Limits in Other Document
X	TMDL	X	e-DMR Participant		

10. Wastewater Sources and Treatment Description:

Wastewater flow from the Culpeper Industrial Air Park is light and intermittent in nature, and originates from light industry businesses, primarily warehouses.

Flow is transported to the system via 3 lift stations and effluent first enters the system through two (2) equalization basins with pre-aeration. Wastewater then flows through a manifold into the aeration basin. Soda ash is then added to the aeration basin as needed at the return sludge location to control pH levels. Wastewater then flows from the aeration basin to the clarifier. Return sludge is then pumped from the bottom of the clarifier and recirculated through the aeration basin for additional treatment. Wastewater then flows through the chlorine contact tank where disinfection is provided by chlorine tablets followed by tablet dechlorination prior to post aeration and discharge to Hubbard Run.

The 0.025 MGD facility is nearing the end of its useful lifespan. In July 2014 a pump station was put online to pump the flows from the Greens Corner High School to the Town of Culpeper's WWTP (VA0061590). The Greens Corner WWTP that had discharged under VPDES Permit VA0092002 was decommissioned at that time. On March 24, 2015, DEQ issued the Certificate to Construct to Culpeper County to begin the work necessary to move the membrane plant from Greens Corner to the Culpeper County Industrial Airpark. The membrane plant along with ultraviolet disinfection will replace the existing, aging facilities; work is expected to be completed in the summer of 2016. Since the plant will be updated and replaced, the County has asked for different flow tiers in the VPDES permit. With this reissuance, the permit will contain flow tiers for 0.025 MGD, 0.0395 MGD and 0.10 MGD.

See Attachment 2 for a facility schematic/diagram of the current facility and the final schematic when the MBR plant goes online.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flows	Outfall Latitude and Longitude
001	Domestic and/or Commercial Wastewater	See Item 10 above.	0.025, 0.0395, 0.10 MGD	**38° 31' 10"** N **77° 51' 30"** W
See Attachment 3 for (Remington Quadrant, DEQ #196D) topographic map.				

11. Sludge Treatment and Disposal Methods:

Excess sludge from the membrane bioreactor is pumped to a holding tank at the head of the aeration basin for disposal at the Town of Remington's WWTP (VA0076805).

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2 – Other Items	
VAR050984	An industrial stormwater discharge for the Culpeper County Airport is located on an unnamed tributary to Hubbard Run. The confluence of the unnamed tributary is less than ½ mile upstream of the Airpark STP discharge.
VAG406023	A small municipal discharge serving one single family home is located on an unnamed tributary to Hubbard Run. The confluence of the unnamed tributary is less than ½ mile downstream of the Airpark STP discharge. This discharge is less than 1,000 gpd.
3-RPP147.49	An ambient water quality monitoring station is located on the Rappahannock River at the Rt. 15 & 29 bridge. This station is near the confluence of Hubbard Run and approximately 2.3 miles downstream of this discharge.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	**Volume Stored**	**Spill/Stormwater Prevention Measures**
Alum	110 gallons	Kept under roof inside containment
Caustic	220 gallons	Kept under roof inside containment
Micro C	220 gallons	Kept under roof inside containment

14. Site Inspection:

Performed by DEQ-Water Compliance staff on April 22, 2015 (Attachment 4).

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

This facility discharges to Hubbard Run, which has been neither monitored nor assessed. Rappahannock River is located approximately 2.3 miles downstream from Outfall 001. The nearest downstream DEQ ambient monitoring station is 3-RPP147.49 on the Rappahannock River at Route 29, approximately 2.3 miles downstream from Outfall 001. The following is the water quality summary for this segment of the Rappahannock River, as taken from the draft 2014 Integrated Report:

Class III, Section 3.

DEQ monitoring stations located in this segment of the Rappahannock River:
DEQ ambient monitoring station 3-RPP147.49, at Route 29
Freshwater probabilistic monitoring station 3-RPP148.18, upstream of Route 29

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A bacteria TMDL for the Rappahannock River watershed has been completed and approved. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use is listed as fully supporting based on water column metals data.

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4 - Information on Downstream 303(d) Impairments and TMDLs							
Waterbody Name	**Impaired Use**	**Cause**	**Distance From Outfall**	**TMDL completed**	**WLA**	**Basis for WLA**	**TMDL Schedule**
Impairment Information in the Draft 2014 Integrated Report							
Rappahannock River	Recreation	*E. coli*	2.3 miles	Rappahannock River Basin Bacteria TMDL 01/23/2008	1.74E+11 cfu/year *E. coli*	126 cfu/100 ml *E. coli* --- 0.100 MGD*	---

* The WLA assigned to this facility in the TMDL was based on the maximum design flow applicable at the time (0.300 MGD); the WLA has been updated based on the current maximum design flow of 0.100 MGD.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the draft 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.e provides additional information on specific nutrient monitoring and limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.

The planning statement is found in Attachment 5.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Hubbard Run, is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis (Attachment 6) details other water quality criteria applicable to the receiving stream. Some Water Quality Criteria are dependent on the temperature and pH and Total Hardness of the stream and final effluent. The stream and final effluent values used as part of Attachment 6 are as follows:

pH and Temperature for Ammonia Criteria:
The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. Since the effluent may have an impact on the instream values, the temperature and pH values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile temperature and pH values are used because they best represent the critical conditions of the receiving stream.

The critical flows of the receiving stream are 0.0 MGD. In cases such as this, effluent pH and temperature data may be used to establish the ammonia water quality criteria. During the last reissuance, staff reviewed the effluent data for pH and temperature from the daily logs submitted with the DMRs from September 1, 2009 through March 31, 2011. The 90th percentile pH value for the effluent was 7.9 S.U., and the 90th percentile annual temperature is 22.09°C and the 90th percentile wet season (November-April) temperature is 15°C. This data can be found as part of Attachment 6.

Staff has reviewed the maximum and minimum effluent data for pH and temperature reported on DMRs from January 2013 through December 2015 (Attachment 7) and finds no significant differences from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. Therefore, the previously established pH and temperature values for the final effluent shall be carried forward as part of this reissuance process.

Total Hardness for Hardness-Dependent Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's total hardness (expressed as mg/L calcium carbonate) as well as the total hardness of the final effluent.

There is no hardness data for this facility/receiving stream. Staff guidance suggests using a default hardness value of 50 mg/L $CaCO_3$ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 6 are based on this default value.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

E. coli bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean
Freshwater *E. coli* (N/100 ml)	126

[1]For a minimumof four weekly samples [taken during any calendar month].

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Hubbard Run, is located within Section 4 of the Rappahannock River Basin. This section has been designated with no special standards.

e. Threatened or Endangered Species
The Virginia Department of Conservation and Recreation (DCR) requested coordination for this reissuance. In their response dated March 7, 2016 (Attachment 8), they noted that the discharge is adjacent to a stream reach with a natural heritage resource of concern – the Yellow Lance. They recommended that chlorination be replaced with UV disinfection. The County has received the CTC to replace the existing facilities with a membrane plant with UV disinfection. It is staff's best professional judgment that the limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened and endangered species found near the discharge.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation of the stream's critical flows. The critical flows for the stream are zero and at times the stream flow is comprised of only effluent. It is staff's best professional judgment that such streams are Tier I since the limits are set to meet the WQS. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLAs) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLAs are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and

statistical characteristics of the effluent data.

a. Effluent Screening:
Effluent data obtained from the permit application and Discharge Monitoring Reports (DMRs) has been reviewed and determined to be suitable for evaluation. Please see Attachment 7 for a summary of effluent data. The facility reported an exceedance of the weekly ammonia limitation on the August 2014 DMR, but the problem has been resolved and there have been no further problems at the facility.

The following pollutants require a wasteload allocation analysis: Ammonia as N and Total Residual Chlorine.

b. Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co\,[\,Qe + (\,f\,)(Qs\,)\,] - [\,(\,Cs\,)(\,f\,)(\,Qs\,)\,]}{Qe}$$

Where:
- WLA = Wasteload allocation
- Co = In-stream water quality criteria
- Qe = Design flow
- Qs = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- Cs = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10, 30Q10, and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the Co.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge, ammonia as N is likely present since this is a WWTP treating sewage and total residual chlorine may be present since chlorine is used for disinfection at the existing facility. As such, Attachment 6 details WLA derivations for these pollutants.

c. Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

0.025 MGD Flow Tier
During the last reissuance, staff reevaluated pH and temperature and concluded that it was significantly different than what was used previously to derive ammonia criteria. As result, staff used the new data to determine new ammonia water quality criteria, new wasteload allocations (WLAs) and new ammonia limits (Attachment 9). DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage. Although the analysis would have allowed for a relaxation of the ammonia limitations, staff had no basis to allow backsliding. Changes in regulation as specifically excluded as a basis for backsliding; therefore, the current limitations were carried forward. The derivation of the current limitations is also found in Attachment 9. Staff proposes to carry forward these limitations with this reissuance.

Also, the facility should be aware that the Environmental Protection Agency (EPA) finalized new, more stringent ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent in NPDES Discharge Permits. It is staff's best professional judgment that incorporation of these criteria into the Virginia Water Quality Standards is forthcoming. This and many other facilities may be required to comply with these new criteria during their next respective permit terms, so any minor changes in the Ammonia as N effluent limitations would be counterproductive to the new EPA ammonia criteria.

0.0395 MGD and 0.10 MGD flow tiers
While the flow tiers are changing with this reissuance, staff is not proposing any changes to the established limitations for the expanded flow tiers. During the 2000 reissuance, DEQ permitting staff made the determination that marsh characteristics exist downstream of the outfall. Guidance states that a year round limit of 3.0 mg/L TKN should be used when a facility discharges to waters that cannot be easily modeled. A TKN limit of 3.0 mg/L assumes that the remaining nitrogen is in the form of refractory organic compounds that will not be easily oxidized and that ammonia is removed when the 3.0 mg/L TKN limit is met. The weekly average limit will be 4.5 mg/L based on a multiplier of 1.5 times the monthly average.

2) Total Residual Chlorine:

0.025 MGD flow tier for the existing facility
Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows and current water quality criteria. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.008 mg/L and a weekly average limit of 0.010 mg/L are proposed for this discharge (Attachment 9).

0.025, 0.0395, and 0.10 MGD tiers for new facility
The new wastewater facilities for the Culpeper Industrial Airpark will utilize ultraviolet (UV) disinfection in lieu of chlorination. Since the chlorine equipment will be removed, there will be no chlorine limitations included in the flow tiers for the new wastewater treatment facilities.

3) Metals/Organics:

The current permit has not required expanded effluent testing. With this reissuance, when the Certificate to Operate for the 0.10 MGD flow tier, the permittee shall be required to monitor for the pollutants identified in Attachment A of the permit and submit the results with the application for reissuance.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

0.025 MGD flow tier
No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), and pH limitations are proposed. Dissolved Oxygen and BOD_5 limitations are based on the stream modeling conducted in December 1984 (Attachment 10) and are set to meet the water quality criteria for D.O. in the receiving stream and are also in accordance with 9VAC25-31-30 which incorporate the Federal Effluent Guidelines for Secondary Treatment (40CFR Part 133). It is staff's practice to equate the Total Suspended Solids limits with the BOD_5 limits. TSS limits are established to equal BOD_5 limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170. On January 9, 2012, the facility was granted a reduction in the frequency of monitoring for *E. coli* to 4 samples in a month once per quarter. This reduction shall be allowed to remain in place at the 0.025 MGD flow tier until the Certificate to Operate for the 0.0395 MGD or the 0.10 MGD facility is obtained.

0.0395 MGD and 0.10 MGD flow tiers
No changes to the dissolved oxygen (D.O.), carbonaceous biochemical oxygen demand-5 day ($CBOD_5$), total suspended solids (TSS), and pH limitations are proposed. During the 2000 reissuance, staff made the determination that marsh characteristics exist downstream of the outfall. Carbonaceous biochemical oxygen demand 5-day ($CBOD_5$), TSS, Dissolved Oxygen, and TKN limitations were based on best professional judgment and Guidance Memo 00-2011. This guidance is applicable to waters such as this portion of Hubbard Run where the water is shallow, flow is intermittent, and the waters cannot be modeled.

It is staff's practice to equate the Total Suspended Solids limits with the $CBOD_5$ limits. TSS limits are established to equal

$CBOD_5$ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170. No reductions in the *E. coli* monitoring shall be allowed at these flow tiers since UV is used for disinfection.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients
VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology. The basis for the concentration limits is 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of ≥0.04 MGD to treat for TN and TP to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

This facility has also obtained coverage under 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN020138. Total Nitrogen Annual Loads and Total Phosphorus Annual Loads from this facility are found in General Permit Registration List.

Monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit for all flow tiers. Annual Averages for Total Nitrogen and Total Phosphorus are included in this permit for the 0.0395 and 0.10 MGD flow tiers.

0.025 MGD Flow Tier
The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. DEQ Guidance Memorandum 14-2011 signed on August 8, 2014 established standard nutrient monitoring conditions for "nonsignificant" discharges within the Chesapeake Bay watershed. Nonsignificant dischargers are subject to aggregate wasteload allocations for Total Nitrogen (TN), Total Phosphorus (TP), and Sediments under the Total Maximum Daily Load (TMDL) for the Chesapeake Bay. Monitoring for TN, TP and TSS is required in order to verify the aggregate wasteload allocations. The frequency for this monitoring is once per year.

0.0395 MGD and 0.10 MGD Flow Tiers
The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9VAC25-820. Annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen and Total Phosphorus are included in this individual permit. The annual averages for the 0.0395 and 0.1 MGD flow tiers are based on the permitted design capacity (1424 lb/yr TN and 190 lb/yr TP) assigned to the facility at 9VAC25-720-70; the concentrations will insure that the facility will be able to comply with the Total Nitrogen and Total Phosphorus Annual Loads. The facility has also submitted an offset plan as part of their registration statement for the General Permit.

f. Effluent Limitations and Monitoring Summary:

The effluent limitations are presented in the following table. Limits were established for Flow, BOD_5, $CBOD_5$, Total Suspended Solids, Ammonia as N, TKN, pH, Dissolved Oxygen, *E. coli,* Total Residual Chlorine, Total Nitrogen, and Total Phosphorus. Monitoring was established for Flow and Nitrate+Nitrite. The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual except for the composite period for the conventional parameters at the 0.10 MGD MGD flow tier. The Water Permit Manual recommends a 4-hour composite sample at the 0.10 MGD flow tier; 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* requires an 8-hour composite. In order to simplify sample collection, all composites

shall be 8-hour composites.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for CBOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and effluent limits demonstrate that there is greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19.a. Effluent Limitations/Monitoring Requirements:

Design flow is 0.025 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the issuance of a Certificate to Operate (CTO) for the 0.0395 MGD or the0.10 MGD facility or the permit's expiration date, whichever occurs first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D	Estimate
BOD_5	1, 5	30 mg/L 2.8 kg/day	45 mg/L 4.3 kg/day	NA	NA	1/M	Grab
Total Suspended Solids	1, 2	30 mg/L 2.8 kg/day	45 mg/L 4.3 kg/day	NA	NA	1/M	Grab
Ammonia, as N (November - April)	3	3.1 mg/L	3.1 mg/L	NA	NA	1/M	Grab
Ammonia, as N (May - October)	3	2.1 mg/L	2.1 mg/L	NA	NA	1/M	Grab
Total Kjeldahl Nitrogen (TKN)	6	NL mg/L	NA	NA	NA	1/M	Grab
Nitrate+Nitrite, as N	6	NL mg/L	NA	NA	NA	1/M	Grab
Total Nitrogen[(c)]	6	NL mg/L	NA	NA	NA	1/M	Grab
Total Phosphorus	6	NL mg/L	NA	NA	NA	1/M	Grab
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
Dissolved Oxygen	3	NA	NA	6.0 mg/L	NA	1/D	Grab
E. coli (Geometric Mean)[(a)(b)]	3	126 n/cmL	NA	NA	NA	1/3M	Grab
Total Residual Chlorine (After Chlorine Contact Tank)	4	NA	NA	1.0 mg/L	NA	1/D	Grab
Total Residual Chlorine (After Dechlorination)	3	0.008 mg/L	0.010 mg/L	NA	NA	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Policy
5. Stream model – Attachment 10
6. GM14-2011/Chesapeake Bay TMDL Watershed Implementation Plan

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.

1/D = Once every day.
1/M = Once per month.
1/3M = Once per calendar quarter.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Samples shall be collected between 10:00 a.m. and 4:00 p.m.

b. The permittee was granted a reduction in the sampling frequency to once per calendar quarter. The permittee shall collect four (4) weekly samples during one month within each quarterly monitoring period as defined below. The results shall be reported as the geometric mean. The quarterly monitoring periods shall be January through March, April through June, July through September and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

Should any of the quarterly monitoring results for *E. coli* exceed 126 n/100mL, reported as the geometric mean, the monitoring frequency shall revert to once per week for the remainder of the permit term.

c. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

19.b. Effluent Limitations/Monitoring Requirements:

Design flow is 0.0395 MGD.

Effective Dates: During the period beginning with the issuance of a Certificate to Operate (CTO) for the 0.0395 MGD and lasting until the Certificate to Operate (CTO) for the 0.10 MGD facility or the permit's expiration date, whichever occurs first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
$CBOD_5$	2, 3	10 mg/L 1.5 kg/day	15 mg/L 2.2 kg/day	NA	NA	1/W	Grab
Total Suspended Solids (TSS)	2	10 mg/L 1.5 kg/day	15 mg/L 2.2 kg/day	NA	NA	1/W	Grab
Dissolved Oxygen	3	NA	NA	6.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	2, 3	3.0 mg/L 0.45 kg/day	4.5 mg/L 0.67 kg/day	NA	NA	1/W	Grab
E. coli (Geometric Mean)[(c)]	3	126 n/100mls	NA	NA	NA	1/W	Grab
Nitrate+Nitrite, as N	3, 6	NL mg/L	NA	NA	NA	1/M	Grab
Total Nitrogen [a]	3, 6	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen – Year to Date [b]	3, 6	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year [b]	3, 6	12 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	3, 6	NL mg/L	NA	NA	NA	1/M	Grab
Total Phosphorus – Year to Date [b]	3, 6	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year [b]	3, 6	1.6 mg/L	NA	NA	NA	1/YR	Calculated

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 7
6. 9VAC25-720 (WQMP Regulation)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
1/W = Once every week.
1/M = Once every month.
1/YR= Once every calendar year.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20.a. for the calculation of the Nutrient Calculations. The calendar year annual averages for Total Nitrogen and Total Phosphorus are effective January 1st of the year after issuance of the CTO for the expanded facility.

c. Samples shall be collected between 10:00 a.m. and 4:00 p.m.

19.c. Effluent Limitations/Monitoring Requirements:

Design flow is 0.10 MGD.

Effective Dates: During the period beginning with the issuance of a Certificate to Operate (CTO) for the 0.10 MGD and lasting until the permit's expiration date, whichever occurs first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
$CBOD_5$	2, 3	10 mg/L 3.8 kg/day	15 mg/L 5.7 kg/day	NA	NA	1/W	8H-C
Total Suspended Solids (TSS)	2	10 mg/L 3.8 kg/day	15 mg/L 5.7 kg/day	NA	NA	1/W	8H-C
Dissolved Oxygen	3	NA	NA	6.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	2, 3	3.0 mg/L 1.1 kg/day	4.5 mg/L 1.7 kg/day	NA	NA	1/W	8H-C
E. coli (Geometric Mean)[(c)]	3	126 n/100mls	NA	NA	NA	1/W	Grab
Nitrate+Nitrite, as N	3, 6	NL mg/L	NA	NA	NA	2/M	8H-C
Total Nitrogen [a.]	3, 6	NL mg/L	NA	NA	NA	2/M	Calculated
Total Nitrogen – Year to Date [b]	3, 6	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year [b]	3, 6	4.7 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	3, 6	NL mg/L	NA	NA	NA	2/M	8H-C
Total Phosphorus – Year to Date [b]	3, 6	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year [b]	3, 6	0.62 mg/L	NA	NA	NA	1/YR	Calculated

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 7
6. 9VAC25-720 (WQMP Regulation)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
1/W = Once every week.
1/M = Once every month.
2/M = Twice every month, >7 days apart
1/YR = Once every calendar year.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20.a. for the calculation of the Nutrient Calculations. The calendar year annual averages for Total Nitrogen and Total Phosphorus are effective January 1st of the year after issuance of the CTO for the expanded facility.

c. Samples shall be collected between 10:00 a.m. and 4:00 p.m.

20. Other Permit Requirements:

a. Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.
These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-790 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

b. Permit Section Part I.C., details the requirements of a Pretreatment Program:
The VPDES Permit Regulation at 9VAC25-31-730 through 900., and 40 CFR Part 403 requires POTWs with a design flow of >5 MGD and receiving from Industrial Users (IUs) pollutants that pass through or interfere with the operation of the POTW, or are otherwise subject to pretreatment standards, to develop a pretreatment program.

The Culpeper Industrial Airpark WWTP is a POTW with a current design capacity of 0.025 MGD with expansion tiers of 0.0395 MGD and 0.10 MGD. Since this facility receives discharges from an industrial park, the permit includes pretreatment program conditions in accordance with DEQ guidance in Part I.C of the VPDES permit to determine if a pretreatment program may be needed.

21. Other Special Conditions:

a. **95% Capacity Reopener.** The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.

b. **Indirect Dischargers.** Required by VPDES Permit Regulation, 9VAC25-31-200 B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c. **O&M Manual Requirement.** Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d. **CTC, CTO Requirement.** The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

e. **Licensed Operator Requirement.** The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. There is no licensed operator requirement for the 0.025 MGD flow tier. The facility shall require a Class III operator for all other flow tiers (0.0395 MGD, and 0.10 MGD). Within 90 days of the issuance of the CTO for any of the expanded tiers, the permittee shall notify DEQ that a wastewater operator with the appropriate class license is employed by the permittee.

f. **Reliability Class.** The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of II.

g. **Treatment Works Closure Plan.** This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected to close. This is necessary to ensure treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. Section §62.1-44.21 requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

h. **Water Quality Criteria Reopener.** The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should data collected and submitted for Attachment A of the permit, indicate the need for limits to ensure protection of water quality criteria, the permit may be modified or alternately revoked and reissued to impose such water quality-based limitations.

i. **Water Quality Criteria Monitoring.** State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit within six (6) months of the issuance of the Certificate to Operate for the 0.10 MGD flow tier.

j. **Sludge Reopener.** The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA.

k. **Sludge Use and Disposal.** The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

l. **Nutrient Offsets**. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.

m. **E3/E4.** 9VAC25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

n. **Nutrient Reopener.** 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

o. **TMDL Reopener.** This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:
   1) The Water Quality Monitoring special condition was added requiring the facility to monitor for the pollutants identified in Attachment A within 6 months of the Certificate to Operate for the 0.10 MGD flow tier.
   2) The licensed operator special condition flow tiers were updated to match the requested flow tiers of 0.025 MGD, 0.0395 MGD, and 0.10 MGD.
   3) The requirement for an industrial survey is included with this draft to determine if there are any industrial contributions that may require the facility to implement an industrial pretreatment program.
b. Monitoring and Effluent Limitations:
   1) The permittee requested that the flow tiers be changed from 0.025, 0.075, 0.15 and 0.3 MGD to 0.025, 0.395, and 0.10 MGD. The draft reflects the requested changes to the flow tiers.
   2) Chlorine limitations were removed from the two expanded flow tiers since the replacement facility will utilize UV disinfection.

24. Variances/Alternate Limits or Conditions:

There are no variances or alternate limits proposed in this draft permit.

25. Public Notice Information:

First Public Notice Date: 5/16/2016 Second Public Notice Date: 5/23/2016

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, alison.thompson@deq.virginia.gov. See Attachment 11 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

Previous Board Action(s): There have been no recent enforcement actions.

Staff Comments: No additional comments.

Public Comment: No comments received during the public notice.

Attachments to the Fact Sheet for VA0068586
Culpeper Industrial Airpark WWTP

Attachment 1	Flow Frequency Determination
Attachment 2	Facility Schematics
Attachment 3	Topographic Map
Attachment 4	Facility Inspection April 22, 2015
Attachment 5	Planning Statement dated February 19, 2016
Attachment 6	Water Quality Criteria and Wasteload Allocation Determinations pH and Temperature Determinations
Attachment 7	Effluent Data
Attachment 8	Virginia Department of Conservation and Recreation Comments
Attachment 9	Limit Derivations
Attachment 10	Dissolved Oxygen and BOD Calculations
Attachment 11	Public Notice

Attachment 1

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Office of Water Quality Assessments
629 East Main Street P.O. Box 10009 Richmond, Virginia 23219

SUBJECT: Flow Frequency Determination
Utility Construction Management STP – #VA0068586

TO: Anna Tuthill, NRO

FROM: Paul E. Herman, P.E., WQAP

DATE: September 30, 1999

COPIES: Ron Gregory, Charles Martin, File

This memo supersedes my December 1, 1994, memo to April Young concerning the subject VPDES permit.

The Utility Construction Management STP discharges to the Hubbard Run near Remington, Virginia. Flow frequencies are required at this site for use by the permit writer in developing the VPDES permit.

The USGS conducted several flow measurements on the Tinpot Run from 1979 to 1980. The measurements were made at the U.S. Highway 15/29 (Business) bridge at Remington, VA. The measurements made by the USGS correlated very well with the same day daily mean values from the continuous record gage on the Hazel River at Rixeyville, VA (#01663500). The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gage were plotted on the regression line and the associated flow frequencies at the measurement site were determined from the graph. The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gage, the measurement site and the discharge point are presented below:

Hazel River at Rixeyville, VA (#01663500):

Drainage Area = 287 mi^2

1Q10 = 4.3 cfs
7Q10 = 5.9 cfs
30Q5 = 19 cfs
High Flow 1Q10 = 47 cfs
High Flow 7Q10 = 56 cfs
HM = 86 cfs

Tinpot Run at U.S. Route 15/29, at Remington, VA (#01664100):

Drainage Area = 9.70 mi^2

1Q10 = 0.0 cfs
7Q10 = 0.0 cfs
30Q5 = 0.0 cfs
High Flow 1Q10 = 0.001 cfs
High Flow 7Q10 = 0.002 cfs
HM = 0.0 cfs

Hubbard Run at discharge point:

Drainage Area = 0.483 mi^2

1Q10 = 0.0 cfs
7Q10 = 0.0 cfs
30Q5 = 0.0 cfs
High Flow 1Q10 = 0.0 cfs
High Flow 7Q10 = 0.0 cfs
HM = 0.0 cfs

For modeling purposes, the flow frequencies for the Hubbard Run at its mouth and the Rappahannock River are provided below. The Rappahannock River flow frequencies represent those for the gaging station located 2000 feet downstream of Hubbard Run.

Hubbard Run at mouth:

Drainage Area = 3.28 mi^2

1Q10 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
30Q5 = 0.0 cfs	HM = 0.0 cfs

Rappahannock River at Remington, VA (#01664000):

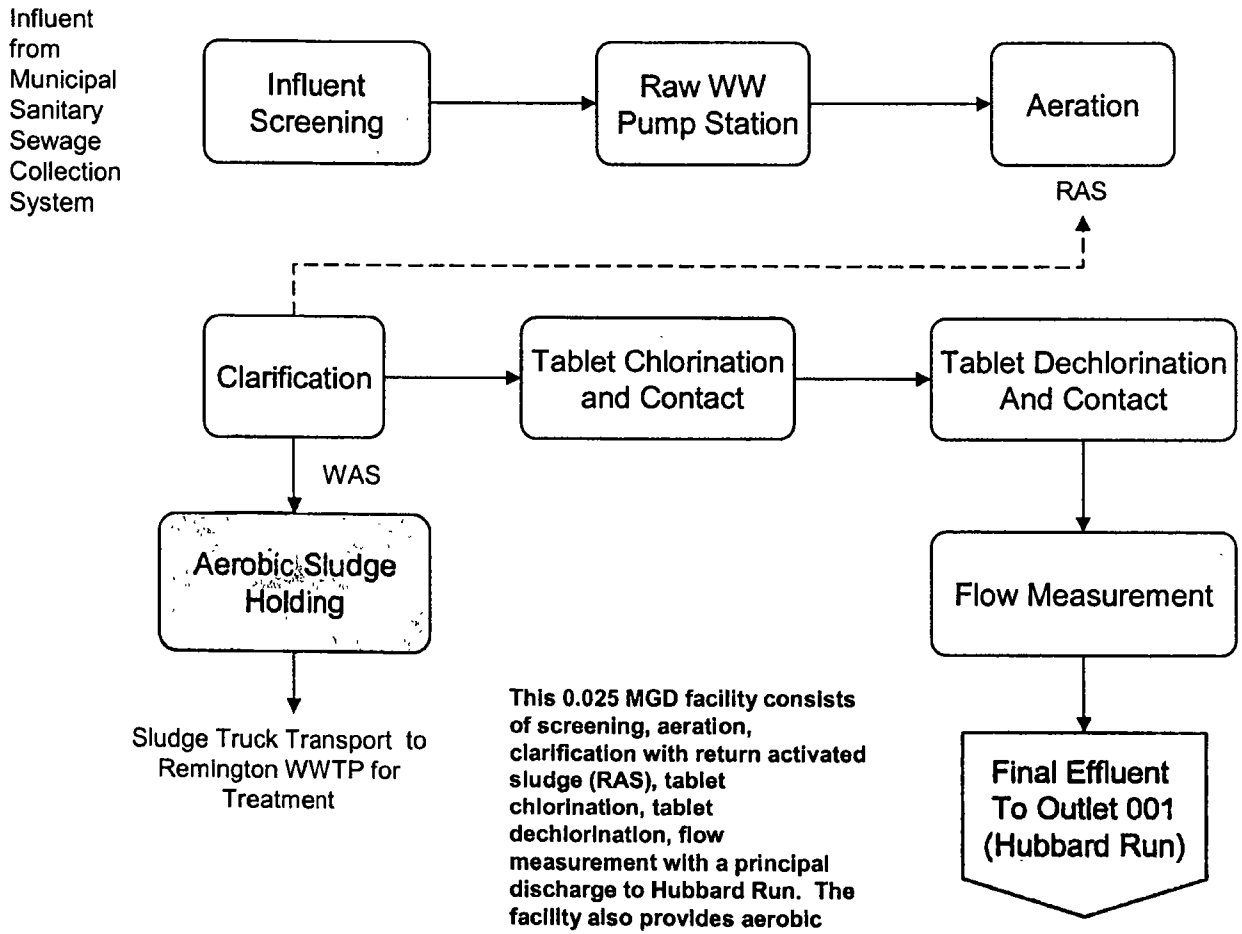
Drainage Area = 620 mi^2

1Q10 = 9.2 cfs	High Flow 1Q10 = 93 cfs
7Q10 = 11 cfs	High Flow 7Q10 = 113 cfs
30Q5 = 34 cfs	HM = 164 cfs

The high flow months are December through May. If you have any questions concerning this analysis, please let me know.

Attachment 2

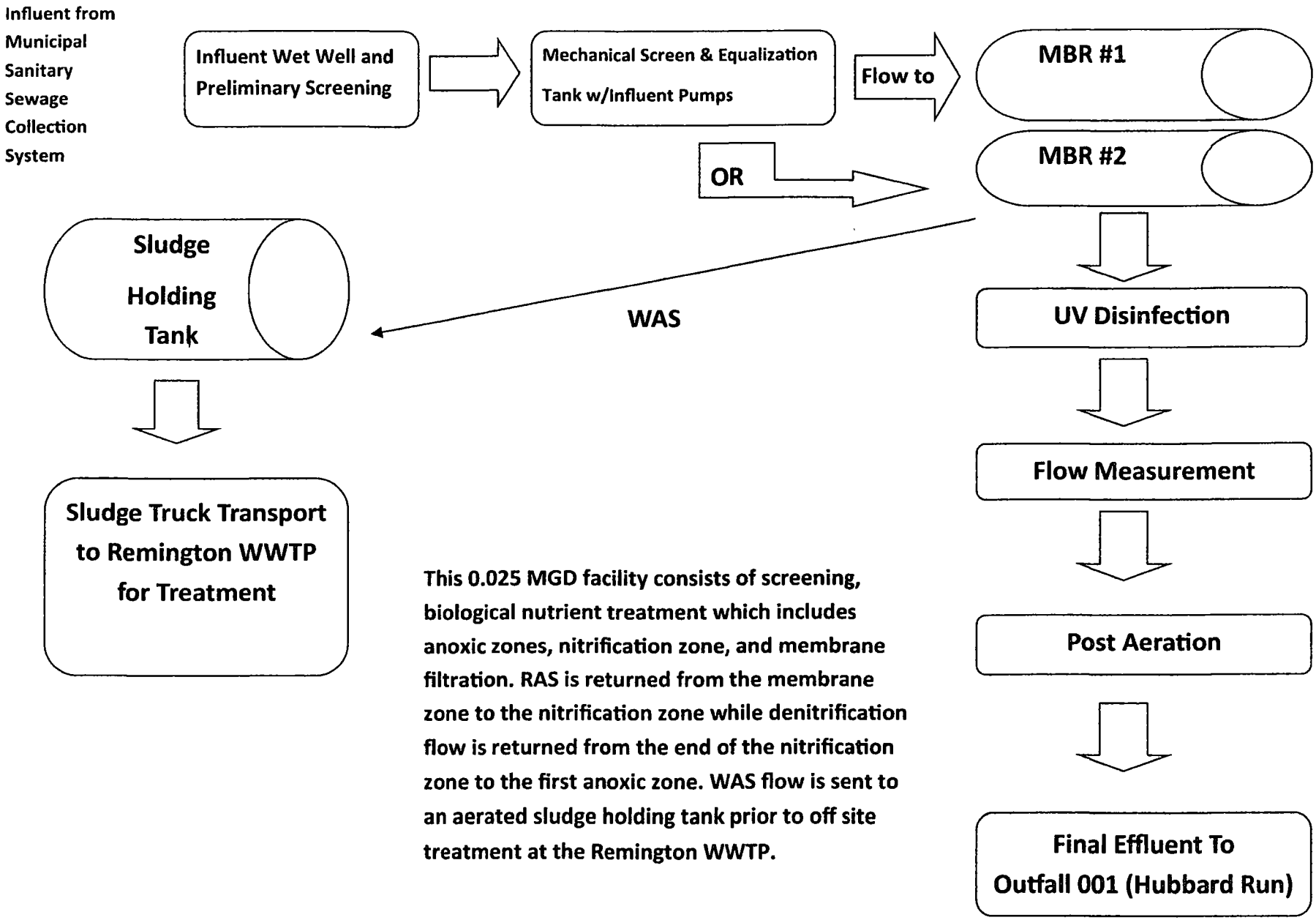
Culpeper County
Air Park Wastewater Treatment Facility
VA0068586 Process Flow Diagram



This 0.025 MGD facility consists of screening, aeration, clarification with return activated sludge (RAS), tablet chlorination, tablet dechlorination, flow measurement with a principal discharge to Hubbard Run. The facility also provides aerobic sludge holding prior to off site treatment at the Remington WWTP.

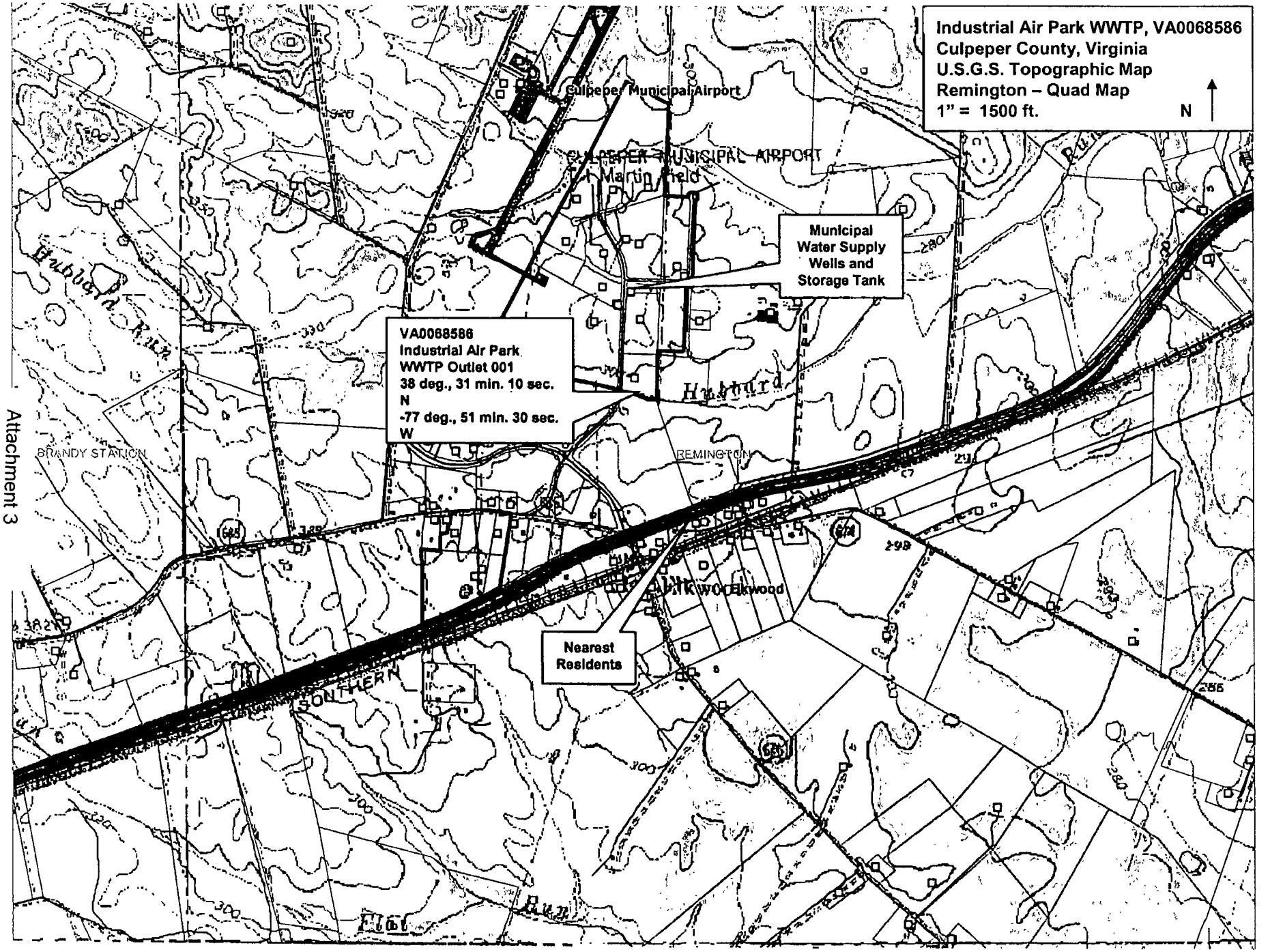
Attachment 2

Culpeper County Industrial Airpark WWTP VA0068586 Process Flow Diagram

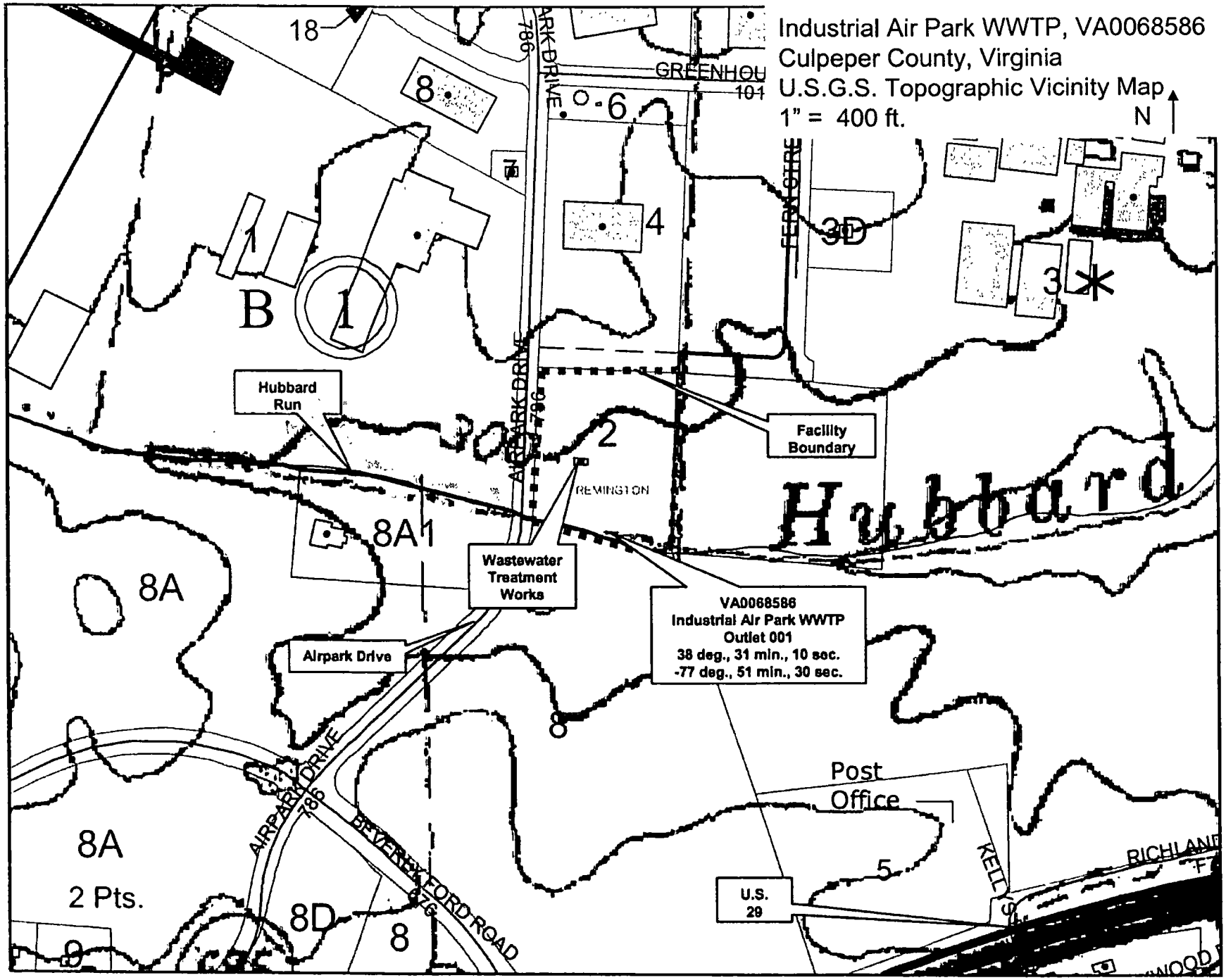


This 0.025 MGD facility consists of screening, biological nutrient treatment which includes anoxic zones, nitrification zone, and membrane filtration. RAS is returned from the membrane zone to the nitrification zone while denitrification flow is returned from the end of the nitrification zone to the first anoxic zone. WAS flow is sent to an aerated sludge holding tank prior to off site treatment at the Remington WWTP.

Attachment 3



Attachment 3


Industrial Air Park WWTP, VA0068586
Culpeper County, Virginia
U.S.G.S. Topographic Vicinity Map
1" = 400 ft.
N
Hubbard Run
Facility Boundary
Wastewater Treatment Works
VA0068586
Industrial Air Park WWTP
Outlet 001
38 deg., 31 min., 10 sec.
-77 deg., 51 min., 30 sec.
Airpark Drive
Post Office
U.S. 29
Hubbard
8A
2 Pts.
8D
B 1
8A1
AIRPARK DRIVE
BEVERLEY FORD ROAD
REMINGTON
GREENHOU
FERRY CIRC

Attachment 4

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193

(703) 583-3800 Fax (703) 583-3821

www.deq.virginia.gov

David K Paylor
Director

Molly Joseph Ward
Secretary of Natural Resources

Thomas A. Faha
Regional Director

May 26, 2015

Paul Howard
Director of Environmental Services
County of Culpeper
118 West Davis St. Ste 101
Culpeper, VA 22701

Re: **Culpeper Industrial Airpark -Technical and Laboratory Inspection, Permit VA0068586**

Dear Mr. Howard:

Attached is a copy of the Inspection Report generated while conducting a Facility Technical Inspection at Culpeper Industrial Airpark-Wastewater Treatment Plant (WWTP) on April 22, 2015. This letter is not intended as a case decision under the Virginia Administrative Process Act, Va. Code § 2.2-4000 *et seq.* (APA). The compliance inspection staff would like to thank Mr. Jonathon Weakley for his time and assistance during the inspection.

Please note the request for corrective action section addressed in the technical summary, and submit in writing, a progress report to this office by June 26, 2015. Your response may be sent either via the US Postal Service or electronically, via E-mail. If you choose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format. Additional inspections may be conducted to confirm the facility is in compliance with permit requirements.

If you have any questions or comments concerning this report, please feel free to contact Lisa Janovsky at the Northern Regional Office at (703) 583-3801 or by E-mail at lisa.janovsky@deq.virginia.gov

Lisa Janovsky
Environmental Specialist II

cc: Permit/DMR File;
Water Compliance Manager

DEQ WASTEWATER FACILITY INSPECTION REPORT

PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0068586	**8/2/2011**		**8/1/2016**

Facility Name	Address	Telephone Number
Culpeper County Industrial Airpark WWTP	**13281 Airpark Drive Culpeper, VA 22701**	**540-727-3409**
Owner Name	Address	Telephone Number
County of Culpeper	**118 West Davis St. Ste 101 Culpeper, VA 22701**	**540-727-3409**
Responsible Official	Title	Telephone Number
Paul Howard	**Director of Environmental Services**	**540-727-3409**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Jonathon Weakley	**Class II/1955005237**	**540-727-3409**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major		Major		Primary	
Non-federal	**X**	Minor	**X**	Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow, MGD	**0.025**
Population Served	**300**
Connections Served	**14**

EFFLUENT LIMITS: mg/L unless otherwise noted. **WWTP OUTFALL 001**

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow	**NA**	**NL**	**NL**	**pH (S.U.)**	**6.0**	**NA**	**9.0**
DO	**6.0**			**BOD_5**		**30**	**45**
Total Residual Chlorine-Effluent		**0.008**	**0.010**	**Ammonia as N (Nov-April)**		**3.1**	
Total Residual Chlorine-Contact Tank	**1.0**			**Ammonia (May-October)**		**2.1**	
Total Suspended Solids		**30**	**45**	***E.coli* (Geo Mean)**		**126**	

Receiving Stream	**Hubbard Run**
Basin	**Rappahannock River**
Discharge Point (LONG)	**77° 51' 18" W**
Discharge Point (LAT)	**38° 31' 05" N**

DEQ
WASTEWATER FACILITY
INSPECTION REPORT
PART 1

Inspection date: **April 22, 2015**

Date form completed: **May 26, 2015**

Inspection by: **Lisa Janovsky**

Inspection agency: **DEQ-NRO**

Total Time Spent: **20 hrs**

Announced: **No**

Reviewed by: Thomas A Graham

Scheduled: **No**

Present at inspection: **Amy Dooley-DEQ, Jonathon Weakley-Chief Operator of Water/Wastewater**

TYPE OF FACILITY:

Domestic

[ ] Federal [ ] Major
[X] Nonfederal [X] Minor

Industrial

[ ] Major [ ] Primary
[ ] Minor [ ] Secondary

Type of inspection:

[X] Routine
[ ] Compliance/Assistance/Complaint
[ ] Re-inspection

Date of last technical inspection: **November 2, 2006**
Agency: **DEQ**

Population served: **300**

Last Month Average**: April 2015**

Flow	**0.012**	MGD	pH, min-max	**6.7-7.8**	S.U.	Cl_2 Inst Res Max	**<QL**	mg/L
TSS	**<QL**	mg/L	DO	**6.7**	mg/L	Cl_2, Total Contact	**1.0**	mg/L
Ammonia, as N (Nov-April)	**<QL**	mg/L	BOD_5	**<QL**	mg/L			

3 Month Average: February 2015, March 2015, April 2015

Flow	**0.013**	MGD	pH, min-max	**6.7-7.8**	S.U.	Cl_2 Inst Res Max	**<QL**	mg/L
TSS	**1.6**	mg/L	DO	**8.0**	mg/L	Cl_2, Total Contact	**1.0**	mg/L
Ammonia, as N (Nov-April)	**<QL**	mg/L	BOD_5	**<QL**	mg/L			

DATA VERIFIED IN PREFACE [X] Updated [ ] No changes

Has there been any new construction? [ ] Yes [X] No

If yes, were plans and specifications approved? [ ]Yes [ ]No [X]NA

DEQ approval date: **N/A**

- **A Certificate-to-Construct (CTC) was issued in March 2015 for the disconnection of the Greens Corner WWTP (VA0092002) and relocation to the existing Airpark WWTP. This relocation will include the**

installation of two 37,000-gallon steel membrane bioreactor tanks, a 28,000-gallon steel EQ tank, a 37,000-gallon steel sludge holding tank, a portable equipment control building, portable chemical feed/storage building, and associated treatment equipment, air, chemical, and process piping.

((A) PLANT OPERATION AND MAINTENANCE (Outfall 001)

1. Class and number of licensed operators: I -**2**, II - **1**, III - **1**, IV - **0**, Trainee - **0**

2. Hours per day plant is manned: **2 Hours/day, 7 days/week**

3. Describe adequacy of staffing.	[ ] Good	[X] Average	[ ] Poor
4. Does the plant have an established program for training personnel?	[X]Yes	[ ] No	
5. Describe the adequacy of the training program.	[X] Good	[ ] Average	[ ] Poor
6. Are preventive maintenance tasks scheduled?	[X]Yes	[ ] No	
7. Describe the adequacy of maintenance.	[ ] Good	[X] Average	[ ] Poor*
8. Does the plant experience any organic/hydraulic overloading? If yes, identify cause and impact on plant:	[ ] Yes	[X] No	
9. Any bypassing since last inspection?	[ ] Yes	[X] No	
10. Is the standby electric generator operational?	[X] Yes	[ ] No*	[ ] NA
11. Is the STP alarm system operational?	[X] Yes	[ ] No*	[X] NA

12. How often is the standby generator exercised? **Once monthly under full load**
    Power Transfer Switch? **Once monthly**
    Alarm System? **Once monthly**

13. When was the cross connection control device last tested on the potable water service? **N/A**

14. Is sludge being disposed in accordance with the approved sludge disposal plan? [X] Yes [ ] No [ ] NA

15. Is septage received by the facility?	[ ] Yes	[X] No	
Is septage loading controlled?	[ ] Yes	[ ] No	[X] **N/A**
Are records maintained?	[ ] Yes	[ ] No	[X] **N/A**
16. Overall appearance of facility:	[X] Good	[ ] Average	[ ] Poor

Comments:

- **Sludge is hauled from the holding tank to Remington WWTP by a septage hauler**
- **At the time of our arrival, the water lines were being flushed at the fire hydrants and there was no staff available at the plant during that time. Ensure that there is someone available at all times to tend to the plant if need be.**
- **There are Inflow and Infiltration issues at the plant, especially during high rain events.**

(B) PLANT RECORDS (Outfall 001)

1. Which of the following records does the plant maintain?

Operational Logs for each unit process	[X] Yes	[ ] No	[ ] NA
Instrument maintenance and calibration	[X] Yes	[ ] No	[ ] NA
Mechanical equipment maintenance	[X] Yes	[ ] No	[ ] NA
Industrial waste contribution (Municipal Facilities)	[ ] Yes	[ ] No	[X] NA

2. What does the operational log contain?

[X] Visual observations	[X] Flow measurement
[X] Laboratory results	[X] Process adjustments
[X] Control calculations	[ ] Other (specify)

Comments: **None**

3. What do the mechanical equipment records contain?

[X] As built plans and specs	[ ] Spare parts inventory
[X] Manufacturers instructions	[X] Equipment/parts suppliers
[X] Lubrication schedules	[ ] Other (specify)

Comments: **None**

4. What do the industrial waste contribution records contain? **N/A** (Municipal Only)?

[ ] Waste characteristics	[ ] Locations and discharge types
[ ] Impact on plant	[ ] Other (specify)

Comments: **None**

5. Which of the following records are kept at the plant and available to personnel?

[X] Equipment maintenance records	[X] Operational Log
[ ] Industrial contributor records	[X] Instrumentation records
[X] Sampling and testing records	

6. Records not normally available to plant personnel and their location: **Records are maintained and located at the Culpeper office. Records for three dates were requested for review.**

7. Were the records reviewed during the inspection?	[ ] Yes	[X] No
8. Are the records adequate and the O & M Manual current?	[X] Yes	[ ] No
9. Are the records maintained for the required 3-year time period?	[X] Yes	[ ] No

Comments:

- **Log book and records were completed and up to date.**

(C) SAMPLING:

1. Do sampling locations appear to be capable of providing representative samples? [X] Yes [ ] No*
2. Do sample types correspond to those required by the VPDES permit? [X] Yes [ ] No*
3. Do sampling frequencies correspond to those required by the VPDES permit? [X] Yes [ ] No*
4. Are composite samples collected in proportion to flow? [ ] Yes [ ] No* [X] NA
5. Are composite samples refrigerated during collection? [ ] Yes [ ] No* [X] NA
6. Does plant maintain required records of sampling? [X] Yes [ ] No*
7. Does plant run operational control tests? [X] Yes [ ] No

Comments: **None**

(D) TESTING

1. Who performs the testing? [X] Plant [ ] Central Lab [X] Commercial Lab

   Name: **Environmental Systems Service, Ltd (ESS). (VELAP # 460019) and Culpeper Industrial AirPark**

   - **ESS analyzes BOD, TSS, Ammonia, as N, TKN, Nitrite + Nitrate, Total P, and *E. coli***
   - **Culpeper staff analyzes pH, D.O., TRC, and temperature**

If plant performs any testing, complete 2-4.

2. What method is used for chlorine analysis? **Hach Pocket Colorimeter**
3. Does plant appear to have sufficient equipment to perform required tests? [X] Yes [ ] No*
4. Does testing instrumentation appear to be clean and/or operable? [X] Yes [ ] No*

Comments:

- **Instrumentation is in good condition; all buffers are within proper expiration dates.**

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY

1. Is the production process as described in the permit application? (If no, describe changes in comments)
   [ ] Yes [ ] No [X] NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)
   [ ] Yes [ ] No [X] NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:
   [ ] Yes [ ] No* [X] NA

Comments:

- **None**

Summary: **Culpeper Industrial AirPark (Outfall 001):**

- **Ms. Lisa Janovsky and Amy Dooley arrived onsite at 10am. Mr. Jonathan Weakley was flushing water lines at the time of our arrival and came in between flushes to show us around the plant.**
- **The grounds are well maintained (grass was being mowed while DEQ was onsite)**
- **There are 3 pump stations that pump effluent into 2 equalization basins onsite with pre-aeration. Wastewater then enters the extended aeration basin, where soda ash is added for pH control. Mr. Weakley stated that the addition of soda ash varies from 1 bag/week up to 1 bag/ day depending on the time of year.**
- **Wastewater then flows from the aeration basin to the clarifier, where return sludge is re-circulated through the aeration basin for additional treatment. Excess sludge is pumped to a holding tank and hauled to Remington WWTP on as as-needed basis. The wastewater is chlorinated then dechlorinated prior to post-aeration and discharges to Hubbard Run.**

Observations-See Request for Corrective Action Section

- **There was some vegetation growing in the sludge holding tank**
- **There was a little bit of sludge accumulation on the grates**
- **At the outfall, there appeared to be several paper products that resembled screenings and algae in the receiving stream. The effluent existing the pipe appeared to be clear and odor free. Additionally, there was some trash located in the receiving stream.**
- **DEQ observed Mr. Weakley perform TRC samples from the chlorine contact tank and de-chlorination tank. The samples did not meet permit limits (See laboratory report).**
- **DEQ departed the facility at 1300.**

REQUEST for CORRECTIVE ACTION:

1. **Permit VA0068586 Part II.Q. Proper Operation and Maintenance, states: "The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of this permit."**

   Observations: The following items were noted at the inspection:
   - Sludge residue was seen on equipment near the clarifier and sludge holding tank;
   - There was trash observed in the receiving stream;
   - There were some paper products resembling screenings near the outfall pipe

   Provide an explanation to DEQ-NRO office that explains how Culpeper AirPark is going to address each of these issues.

2. **Permit VA0068586, Part 1, Page 1, Section A, Number 1, states: "The minimum concentration of Total Residual Chlorine (after contact tank) is 1.0 mg/L."**

   Observations: The sample that Mr. Weakley took on April 22, 2015 at 12:39pm showed a TRC concentration of 0.40mg/L

3. **Permit VA0068586, Part 1, Page 1, Section A, Number 1, states: "the monthly average concentration of Total Residual Chlorine (after dechlorination) is 0.008 mg/L and the weekly average concentration of TRC after dechlorination is 0.010 mg/L."**

   Observations: The sample that Mr. Weakley took on April 22, 2015 showed a TRC concentration of 0.02 mg/L, which is greater than both the weekly and monthly average concentrations.

   Provide an explanation as to how the facility addressed this issue.

UNIT PROCESS: Flow Equalization

1. Type: [ ] In-line [X] Side-line [ ] Spill pond — Number of cells: **1**

2. What unit process does it precede? **Aeration basin**

3. Is volume adequate? [X] Yes [ ] No

4. Mixing:[ ] None [X] Diffused air [ ] Fixed mechanical [ ] Floating mechanical

5. Condition of mixing equipment: [X] Good [ ] Average [ ] Poor

6. How drawn off?
   A. Pumped from: [ ] Surface [X] Sub-surface [ ] Adjustable

7. Is containment structure in good condition? [X] Yes [ ] No

8. Are the facilities to flush solids and grease from basin walls adequate? [X] Yes [ ] No [ ] NA

9. Are there facilities for withdrawing floating material and foam? [ ] Yes [X] No

10. How are solids removed? [ ] Drain down [ ] Drag line [ ] NA [X] Other

    Is it adequate? [X] Yes [ ] No

11. Is the emergency overflow in good condition? [ ] Yes [ ] No [X] NA

12. Are the depth gauges in good condition? [X] Yes [ ] No [ ] NA

Comments:

- **Solids can be removed by septage truck. They use the company Butler and Eicker to pump and haul between every 3 weeks up to a month.**

UNIT PROCESS: Activated Sludge Aeration

1. Number of units: **1** In operation: **1**
2. Mode of operation: **Extended Aeration**
3. Proper flow distribution between units: [**X**] Yes [ ] No* [**X**] NA
4. Foam control operational: [ ] Yes [ ] No* [**X**] NA
5. Scum control operational: [ ] Yes [ ] No* [**X**] NA
6. Evidence of following problems:
   a. dead spots [ ] Yes* [**X**] No
   b. excessive foam [ ] Yes* [**X**] No
   c. poor aeration [ ] Yes* [**X**] No
   d. excessive aeration [ ] Yes* [**X**] No
   e. excessive scum [ ] Yes* [**X**] No
   f. aeration equipment malfunction [ ] Yes* [**X**] No
   g. other (identify in comments) [**X**] Yes* [ ] No
7. Mixed liquor characteristics (as available): **April 2015**

	Tank
Color:	**Brown**
Odor:	**Earthy**
Settleability:	**500 ml/L**
D.O.	**1.0-6.68 mg/L**

8. Return/waste sludge:
   Waste Frequency: **Waste approximately 1/week between 5 and 20 minutes.**
9. Aeration system control: [ ] Time Clock [ ] Manual [**X**] Continuous [ ] Other (explain)
10. Effluent control devices working properly (oxidation ditches): [ ] Yes [ ] No* [**X**] NA
11. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments: **None**

UNIT PROCESS: Sedimentation

[X] Primary [ ] Secondary [ ] Tertiary

1. Number of units: **1**	In operation:	**1**		
2. Proper flow distribution between units:		[ ] Yes	[ ] No*	[**X**] NA
3. Signs of short circuiting and/or overloads:		[ ] Yes	[**X**] No	
4. Effluent weirs level:		[**X**] Yes	[ ] No*	
Clean:		[**X**] Yes	[ ] No*	
5. Scum collection system working properly:		[**X**] Yes	[ ] No*	[ ] NA
6. Sludge collection system working properly:		[**X**] Yes	[ ] No*	
7. Influent, effluent baffle systems working properly:		[**X**] Yes	[ ] No*	
8. Chemical addition:		[**X**] Yes	[ ] No	
Chemicals: **Alum added occasionally**				
9. Effluent characteristics:				
10. General condition:		[**X**] Good	[ ] Fair	[ ] Poor

Comments:

- **Sludge residue was seen near the aeration basin**
- **Increased cleaning frequency needed - <u>see request for corrective action section.</u>**

UNIT PROCESS: Chlorination

1. No. of chlorinators:	**0**	In operation:	**0**	
2. No. of evaporators:	**0**	In operation:	**0**	
3. No. of chlorine contact tanks:	**1**	In operation:	**1**	
4. Proper flow distribution between units:		[ ] Yes	[ ] No*	[X] NA

5. How is chlorine introduced into the wastewater?
   [ ] Perforated diffusers
   [ ] Injector with single entry point
   [X] Other **2 Tablet Feeders**

6. Chlorine residual in basin effluent: **0.40 mg/L analyzed at 12:39pm by Jonathan Weakley (See Request for Corrective Action).**

7. Applied chlorine dosage:	**Feeder tubes topped of daily**	
8. Contact basins adequately baffled:	[X] Yes	[ ] No*
9. Adequate ventilation:		
a. cylinder storage area	[X] Yes	[ ] No*
b. equipment room	[X] Yes	[ ] No*
10. Proper safety precautions used:	[X] Yes	[ ] No*
11. General condition:	[ ] Good	[X] Fair [ ] Poor

Comments:

- **Sample taken while onsite did not meet permit limits.**

UNIT PROCESS: Dechlorination

1. Chemical used:	[ ] Sulfur Dioxide		[**X**] Bisulfite	[ ] Other
2. No. of sulfonators:	0	In operation:	0	
3. No. of evaporators:	0	In operation:	0	
4. No. of chemical feeders:	0	In operation:	0	
5. No. of contact tanks:	1	In operation:	1	
6. Proper flow distribution between units:		[ ] Yes	[ ] No*	[**X**] NA

7. How is chemical introduced into the wastewater?

   [ ] Perforated diffusers
   [ ] Injector with single entry point?
   [**X**] Other **Tablet Feeder**

8. Control system operational:	[ ] Yes	[ ] No*	[**X**] NA
a. residual analyzers:	[ ] Yes	[**X**] No*	
b. system adjusted:	[ ] Automatic	[**X**] Manual	[ ] Other:

9. Applied dechlorination dose: **Topped off daily**

10. Chlorine residual in basin effluent: **0.02 mg/L analyzed at 12:41pm by Jonathan Weakley (See Request for Corrective Action).**

11. Contact basins adequately baffled:	[**X**] Yes	[ ] No*	[ ] NA
12. Adequate ventilation:			
a. cylinder storage area:	[**X**] Yes	[ ] No*	
b. equipment room:	[**X**] Yes	[ ] No*	
13. Proper safety precautions used:	[**X**] Yes	[ ] No*	
14. General condition:	[**X**] Good	[ ] Fair	[ ] Poor

Comments:

- **Sample taken while onsite did not meet permit limits.**

UNIT PROCESS: Post Aeration

1. Number of units: **1** In operation: **1**
2. Proper flow distribution between units: [ ] Yes [ ] No* [X] NA
3. Evidence of following problems:
   a. dead spots [ ] Yes* [X] No
   b. excessive foam [ ] Yes* [X] No
   c. poor aeration [ ] Yes* [X] No
   d. mechanical equipment failure [ ] Yes* [X] No
4. How is the aerator controlled? [ ] Time clock [ ] Manual [X] Continuous [ ] Other: [ ] NA
5. What is the current operating schedule? **Continuous**
6. Step weirs level: [ ] Yes [ ] No [X] NA
7. Effluent D.O. level: **7.09 mg/L @ 12.9°C - taken by Jonathan Weakley at 12:15pm**
8. General condition: [X] Good [ ] Fair [ ] Poor

Comments:

- **No problems observed**

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall: [X] Shore based [ ] Submerged
2. Type if shore based: [ ] Wingwall [ ] Headwall [ ] Rip Rap [X] Other
3. Flapper valve: [ ] Yes [ ] No [X] NA
4. Erosion of bank: [ ] Yes [ ] No [X] NA
5. Effluent plume visible? [ ] Yes* [ ] No [X] NA
6. Condition of outfall and supporting structures: [X] Good [ ] Fair [ ] Poor* [ ] Did not observe
7. Final effluent, evidence of following problems:
   a. oil sheen [ ] Yes* [X] No
   b. grease [ ] Yes* [X] No
   c. sludge bar [ ] Yes* [X] No
   d. turbid effluent [ ] Yes* [X] No
   e. visible foam [ ] Yes* [X] No
   f. unusual color [ ] Yes* [X] No

Comments: **There were some floating solids located near the outfall. Mr. Weakley promptly removed them while DEQ was onsite and stated he will investigate the situation further.**

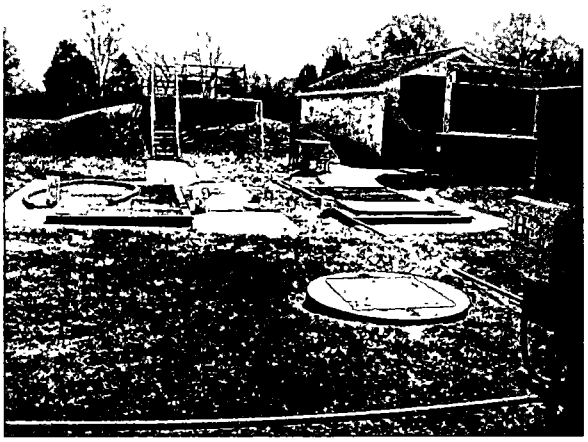


Photo 1: Overview of headworks

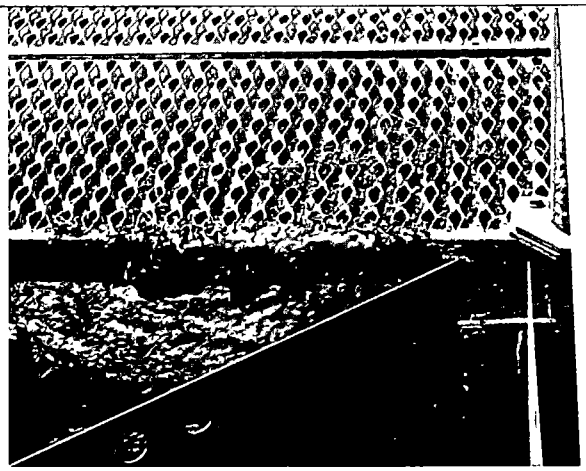


Photo 2: Dried sludge on grates

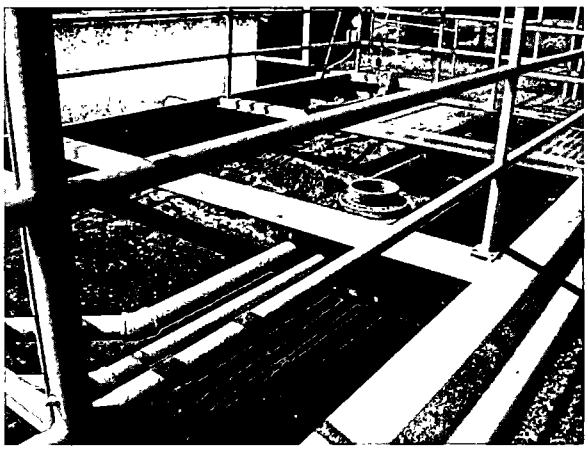


Photo 3: Aeration basin

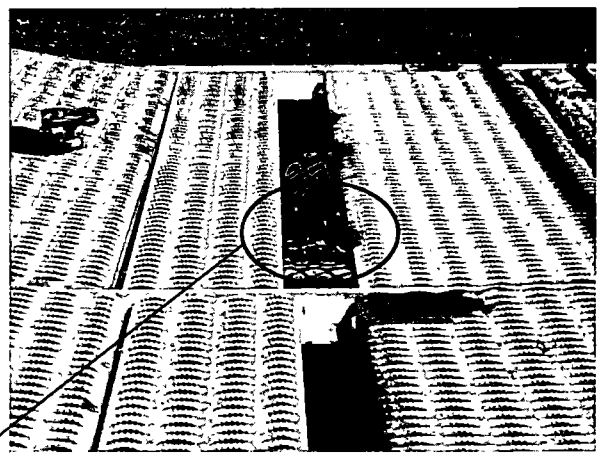


Photo 4: Vegetation in sludge holding tank

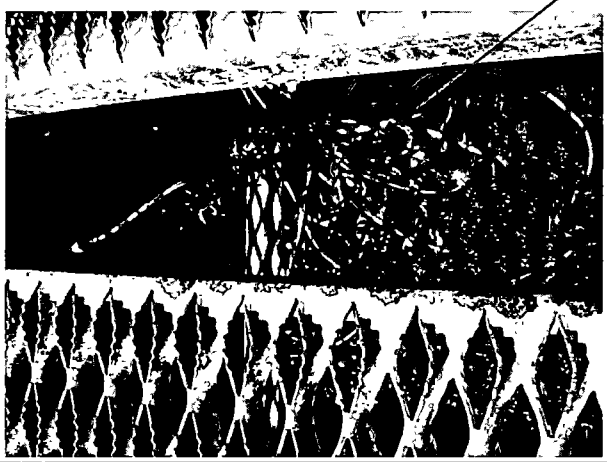


Photo 5: Vegetation in sludge holding tank

Photos by: Amy Dooley

Photos Taken: 4/22/2015

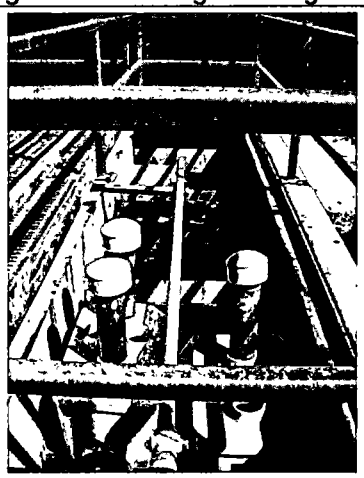


Photo 6: Chlorine Contact Tank

Layout by: Lisa Janovsky

VA0068586

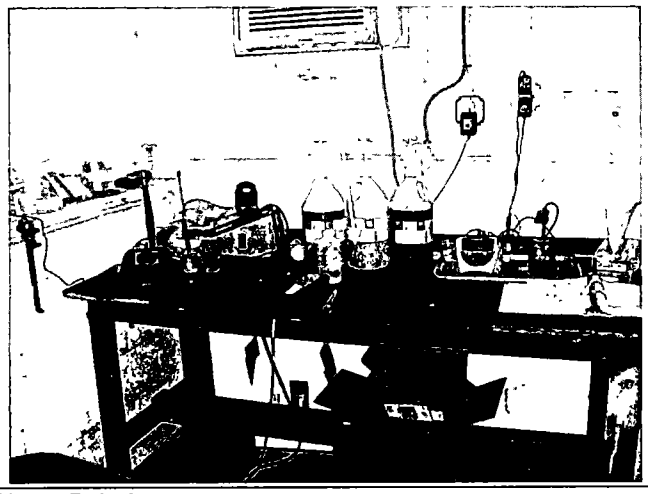
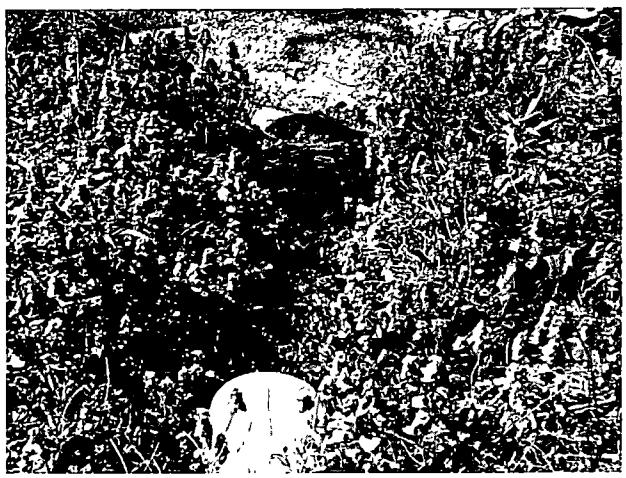


Photo 7: Laboratory set-up	**Photo 8: Solids/algae near outfall 001**
	
Photo 9: Solids floating near outfall 001	**Photo 10: Outfall 001**
Photo 11: Digester	**Photo 12: UV disinfection**
Photos by: Amy Dooley	**Layout by: Lisa Janovsky**
Photos Taken: 4/22/2015	**VA0068586**

Attachment 5

To:	Alison Thompson
From:	Rebecca Shoemaker
Date:	February 19, 2016
Subject:	Planning Statement for Culpeper County Industrial Airpark WWTP
Permit Number:	VA0068586

Information for Outfall 001:

Discharge Type:	Municipal
Discharge Flow:	0.025 MGD with tiers for 0.0395 and 0.10 MGD
Receiving Stream:	Hubbard Run
Latitude / Longitude:	38° 31' 2.5" 77° 51' 18.4"
Rivermile:	2.30
Streamcode:	3-HUB
Waterbody:	VAN-E08R; RA18
Water Quality Standards:	Class III, Section 4, No special standards
Drainage Area:	0.483 sq. mi.

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

This facility discharges to Hubbard Run, which has been neither monitored nor assessed. Rappahannock River is located approximately 2.3 miles downstream from Outfall 001. The nearest downstream DEQ ambient monitoring station is 3-RPP147.49 on the Rappahannock River at Route 29, approximately 2.3 miles downstream from Outfall 001. The following is the water quality summary for this segment of the Rappahannock River, as taken from the draft 2014 Integrated Report:

Class III, Section 3.

DEQ monitoring stations located in this segment of the Rappahannock River:

- *DEQ ambient monitoring station 3-RPP147.49, at Route 29*
- *freshwater probabilistic monitoring station 3-RPP148.18, upstream of Route 29*

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A bacteria TMDL for the Rappahannock River watershed has been completed and approved. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use is listed as fully supporting based on water column metals data.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

No.

3. Are there any 303(d) listed impairments within 15 miles downstream that are relevant to this discharge? If yes, please fill out Table B.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Impairment Information in the Draft 2014 Integrated Report							
Rappahannock River	Recreation	*E. coli*	2.3 miles	Rappahannock River Basin Bacteria TMDL 01/23/2008	1.74E+11 cfu/year *E. coli*	126 cfu/100 ml *E. coli* --- 0.100 MGD*	---

* The WLA assigned to this facility in the TMDL was based on the maximum design flow applicable at the time (0.300 MGD); the WLA has been updated based on the current maximum design flow of 0.100 MGD.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

The tidal Rappahannock River, which is located approximately 36 miles downstream of this facility, is listed with a PCB impairment. In support for the PCB TMDL that is scheduled for development by 2016 for the tidal Rappahannock River, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal discharger. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility located approximately 36 miles upstream from the PCB impairment. Based on this information, this facility will not be requested to monitor for low-level PCBs.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within five miles of this discharge

Attachment 6

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Culpeper Industrial Airpark WWTP Permit No : VA0068586

Receiving Stream: Hubbard Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	22.09 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	15 deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	7.9 SU
10% Maximum pH =	SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0 1 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9 9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9 3E+00	--	--	na	9 3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	2 5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin [C]	0	3 0E+00	--	na	5 0E-04	3 0E+00	--	na	5 0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	1 01E+01	1 72E+00	na	--	1 01E+01	1 72E+00	na	--	--	--	--	--	--	--	--	--	1.01E+01	1.72E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1 01E+01	2 71E+00	na	--	1 01E+01	2 71E+00	na	--	--	--	--	--	--	--	--	--	1.01E+01	2.71E+00	na	--
Anthracene	0	--	--	na	4 0E+04	--	--	na	4 0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6 4E+02	--	--	na	6 4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	o	3 4E+02	1 5E+02	na	--	3 4E+02	1 5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5 1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine [C]	0	--	--	na	2 0E-03	--	--	na	2 0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1 8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1 8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1 8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1 8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5 3E+00	--	--	na	5 3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6 5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2 2E+01	--	--	na	2 2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform [C]	0	--	--	na	1 4E+03	--	--	na	1 4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1 9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	1.8E+00	6 6E-01	na	--	1 8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	1.8E+00	6.6E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane [C]	0	2 4E+00	4 3E-03	na	8.1E-03	2.4E+00	4 3E-03	na	8 1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8 6E+05	2 3E+05	na	--	8.6E+05	2 3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1 1E+01	na	--	1 9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1 6E+03	--	--	na	1 6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1 3E+02	--	--	na	1 3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1 1E+04	--	--	na	1 1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1 6E+03	--	--	na	1 6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1 5E+02	--	--	na	1 5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8 3E-02	4 1E-02	na	--	8.3E-02	4 1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4 2E+01	na	--	3 2E+02	4 2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1 1E+01	na	--	1 6E+01	1 1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1 8E-02	--	--	na	1 8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	7 0E+00	5 0E+00	na	--	7.0E+00	5 0E+00	na	--	--	--	--	--	--	--	--	--	7.0E+00	5.0E+00	na	--
Cyanide, Free	0	2 2E+01	5 2E+00	na	1.6E+04	2 2E+01	5 2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD[C]	0	--	--	na	3 1E-03	--	--	na	3 1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE[C]	0	--	--	na	2 2E-03	--	--	na	2 2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT[C]	0	1 1E+00	1 0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2 2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1 0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1 7E-01	1.7E-01	na	--	1 7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1 8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1 3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9 6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1 9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2 8E-01	--	--	na	2 8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1 7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3 7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7 1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1 0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2 9E+02	--	--	na	2 9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1 5E+02	--	--	na	1 5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene[C]	0	--	--	na	2 1E+02	--	--	na	2 1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin[C]	0	2 4E-01	5 6E-02	na	5.4E-04	2 4E-01	5 6E-02	na	5 4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4 4E+04	--	--	na	4 4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8 5E+02	--	--	na	8 5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1 1E+06	--	--	na	1 1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4 5E+03	--	--	na	4 5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5 3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2 8E+02	--	--	na	2 8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3 4E+01	--	--	na	3 4E+01	--	--	--	--	--	--	--	--	--	--	na	3 4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5 1E-08	--	--	na	5 1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2 0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2 2E-01	5 6E-02	na	8 9E+01	2 2E-01	5 6E-02	na	8 9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2 2E-01	5 6E-02	na	8 9E+01	2 2E-01	5 6E-02	na	8 9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2 2E-01	5 6E-02	--	--	2 2E-01	5 6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8 6E-02	3.6E-02	na	6.0E-02	8 6E-02	3.6E-02	na	6 0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3 0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor[C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	4.9E+01	5.6E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride[C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.0E+02	1.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol[C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
(pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2 0E+01	5 0E+00	na	4.2E+03	2 0E+01	5 0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	1 0E+00	--	na	--	1 0E+00	--	na	--	--	--	--	--	--	--	--	--	**1.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4 0E+01	--	--	na	4 0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3 3E+01	--	--	na	3 3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4 7E-01	--	--	na	4 7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6 0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene[C]	0	7 3E-01	2 0E-04	na	2 8E-03	7 3E-01	2 0E-04	na	2 8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4 6E-01	7 2E-02	na	--	4 6E-01	7 2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7 0E+01	--	--	na	7 0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1 6E+02	--	--	na	1 6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene[C]	0	--	--	na	3 0E+02	--	--	na	3 0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol[C]	0	--	--	na	2 4E+01	--	--	na	2 4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2 4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	6 5E+01	6 6E+01	na	2.6E+04	6 5E+01	6.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**6.5E+01**	**6.6E+01**	**na**	**2.6E+04**

Notes

1 All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise

2 Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals

3 Metals measured as Dissolved, unless specified otherwise

4 "C" indicates a carcinogenic parameter

5 Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information
Antidegradation WLAs are based upon a complete mix

6 Antideg. Baseline = (0 25(WQC - background conc.) + background conc.) for acute and chronic
= (0 1(WQC - background conc) + background conc) for human health

7 WLAs established at the following stream flows 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix

Metal	Target Value (SSTV)
Antimony	6 4E+02
Arsenic	9 0E+01
Barium	na
Cadmium	3 9E-01
Chromium III	2 5E+01
Chromium VI	6 4E+00
Copper	2 8E+00
Iron	na
Lead	3 4E+00
Manganese	na
Mercury	4 6E-01
Nickel	6 8E+00
Selenium	3.0E+00
Silver	4 2E-01
Zinc	2 6E+01

Note do not use QL's lower than the minimum QL's provided in agency guidance

VA0068586 Culpeper County Industrial Airpark WWTP

Date	pH (su)	Temperature (degree C)
March 31, 2011	7.22	9.8
March 30, 2011	7.29	10.3
March 29, 2011	7.23	9.4
March 28, 2011	7.83	8.7
March 24, 2011	7.66	12
March 23, 2011	7.47	12
March 22, 2011	7.19	12
March 21, 2011	7.62	11.5
March 17, 2011	7.33	10.6
March 16, 2011	7.29	10.5
March 15, 2011	7.22	10
March 14, 2011	7.56	9.9
March 13, 2011	7.68	10.1
March 12, 2011	7.28	9.8
March 11, 2011	7.02	10.4
March 10, 2011	7.39	10.6
March 9, 2011	7.55	9.8
March 8, 2011	7.28	9.8
March 7, 2011	7.25	9.8
March 6, 2011	7.41	11.5
March 5, 2011	7.39	11.4
March 3, 2011	7.47	10.2
March 2, 2011	7.51	9.8
March 1, 2011	7.16	10.2
February 28, 2011	7.45	8.7
February 27, 2011	7.65	8.6
February 25, 2011	7.52	10.1
February 24, 2011	7.6	7.3
February 23, 2011	7.59	8.7
February 22, 2011	7.38	8.6
February 21, 2011	8.05	8.1

Note: The facility does not discharge every day. Only the days that the facility discharged and provided effluent data are presented here. The daily log have been placed in the reissuance file.

90th percentile pH: 7.9

90th percentile temperature (annual): 22.09

90th percentile temperature (Nov-Apr): 15

February 17, 2011	7.51	9.1
February 16, 2011	7.97	9.7
February 15, 2011	7.04	8.3
February 14, 2011	7.77	6.4
February 9, 2011	7.51	7.3
February 8, 2011	7.53	8.7
February 7, 2011	7.5	9
February 6, 2011	7.73	9.2
February 5, 2011	7.46	8.9
February 4, 2011	7.32	9.9
February 3, 2011	7.4	8.8
February 2, 2011	7.05	9.1
February 1, 2011	7.43	8.1
January 31, 2011	8.31	7.8
January 29, 2011	7.42	7.4
January 28, 2011	7.77	6.2
January 26, 2011	7.81	7.3
January 25, 2011	7.2	11.5
January 24, 2011	7.35	6.3
January 23, 2011	8.08	3.1
January 20, 2011	7.56	9.2
January 19, 2011	7.35	8.4
January 18, 2011	7.42	7.3
January 17, 2011	7.61	6.1
January 13, 2011	7.95	6.1
January 12, 2011	7.75	6.9
January 11, 2011	7.32	7
January 10, 2011	8.52	4.4
January 6, 2011	7.11	9.1
January 5, 2011	8.2	8.5
January 4, 2011	8.07	8.7
January 3, 2011	7.78	6.6
December 30, 2010	7.55	7.6
December 29, 2010	7.38	7.8

December 28, 2010	7.5	6.8
December 27, 2010	7.61	4.1
December 23, 2010	7.56	9.1
December 22, 2010	7.61	7.6
December 21, 2010	7.53	4.2
December 20, 2010	7.66	4.6
December 17, 2010	7.43	8.8
December 16, 2010	7.1	8.6
December 15, 2010	7.35	5.6
December 14, 2010	7.47	8
December 13, 2010	7.61	10.4
December 12, 2010	8.06	7.4
December 9, 2010	7.69	9.3
December 8, 2010	7.75	9.5
December 7, 2010	7.59	10.3
December 6, 2010	7.96	7.4
December 2, 2010	7.76	13.6
December 1, 2010	7.62	13.5
November 29, 2010	7.44	10.3
November 23, 2010	7.47	15
November 22, 2010	7.75	12.4
November 19, 2010	7.36	15
November 18, 2010	7.28	15.7
November 17, 2010	7.29	16.1
November 16, 2010	7.72	14.1
November 15, 2010	7.78	11.5
November 11, 2010	7.02	14.9
November 10, 2010	7.37	17.2
November 8, 2010	7.82	11.6
November 4, 2010	7.32	15.2
November 3, 2010	6.93	14.7
November 2, 2010	7.19	15.4
November 1, 2010	7.74	13.6
October 28, 2010	7.21	19.7

October 27, 2010	7.03	19.6
October 26, 2010	6.79	18.3
October 25, 2010	7.55	15.6
October 21, 2010	7.28	17.9
October 20, 2010	7.98	17.2
October 19, 2010	7.28	17.9
October 18, 2010	7.34	16
October 14, 2010	7.15	19.1
October 13, 2010	7.81	18.7
October 12, 2010	7.33	19.3
October 11, 2010	7.37	19
October 7, 2010	7.11	18.7
October 6, 2010	7.34	18.5
October 5, 2010	7.19	18.9
October 4, 2010	7.74	17.6
October 2, 2010	7.23	20.2
October 1, 2010	7.16	21
September 30, 2010	7.18	20.7
September 29, 2010	7.64	20.9
September 28, 2010	7.9	21.6
September 27, 2010	8.02	21
September 23, 2010	7.7	21.4
September 22, 2010	7.28	21.3
September 21, 2010	7.84	20.8
September 20, 2010	8.04	21.1
September 16, 2010	7.5	21.7
September 15, 2010	7.69	20.7
September 14, 2010	7.35	21.3
September 13, 2010	8.25	20.6
September 10, 2010	7.4	21.2
September 9, 2010	7.18	22
September 8, 2010	7.37	22.9
September 7, 2010	7.62	22.1
September 3, 2010	7.71	25

September 1, 2010	6.88	24.6
August 31, 2010	7.48	24.5
August 30, 2010	7.71	24.1
August 27, 2010	7.65	23.3
August 26, 2010	8.15	22.5
August 25, 2010	7.58	22.9
August 24, 2010	7.2	23.4
August 23, 2010	7.51	24.8
August 20, 2010	7.28	23.9
August 19, 2010	7.41	23.5
August 17, 2010	7.18	24.1
August 16, 2010	7.55	23.7
August 15, 2010	7.28	23.6
August 14, 2010	7.14	23.4
August 13, 2010	7.16	24.2
August 12, 2010	7.09	25.2
August 11, 2010	7.72	24.8
July 14, 2010	7.14	23
July 13, 2010	7.77	23.3
July 12, 2010	7.82	23.1
July 10, 2010	7.31	24.1
July 9, 2010	7.28	23.8
July 8, 2010	7.97	22.8
July 7, 2010	7.56	22.7
July 6, 2010	7.71	21.8
July 5, 2010	7.4	24.3
July 2, 2010	7.5	20.9
July 1, 2010	7.4	21.4
June 30, 2010	7.74	24.4
June 29, 2010	7.22	25.2
June 28, 2010	7.19	25.3
June 25, 2010	7.26	22.3
June 24, 2010	7.63	22.3
June 23, 2010	7.98	21.8

June 22, 2010	7.24	21.2
June 21, 2010	7.58	22.9
June 18, 2010	7.23	23.1
June 17, 2010	7.48	21
June 16, 2010	7.31	20.8
June 15, 2010	7.26	20.9
June 14, 2010	7.57	22.6
June 11, 2010	7.23	20.3
June 10, 2010	7.86	19.8
June 9, 2010	7.86	19
June 8, 2010	7	19.2
June 7, 2010	7.55	21.3
June 4, 2010	7.52	20
June 3, 2010	7.26	19.8
June 2, 2010	7.1	19.6
June 1, 2010	7.55	21.7
May 29, 2010	6.89	20.7
May 27, 2010	7.2	18.9
May 26, 2010	6.9	18
May 25, 2010	7	18
May 24, 2010	7	17.4
May 23, 2010	7.12	17.4
May 22, 2010	7.77	16.9
May 20, 2010	7.22	16.2
May 19, 2010	7.1	16.1
May 18, 2010	6.91	15.9
May 17, 2010	7.23	17.6
May 14, 2010	7.37	15.9
May 13, 2010	7.53	15.7
May 12, 2010	7.34	15.1
May 11, 2010	7.06	14.9
May 10, 2010	7.94	14.9
May 7, 2010	7.2	16.8
May 6, 2010	7.28	16.9

May 5, 2010	7.25	16.7
May 4, 2010	7.47	16.5
May 3, 2010	8.36	18.7
April 30, 2010	8.05	13.2
April 29, 2010	7.2	13.7
April 28, 2010	7.47	13.6
April 27, 2010	7.25	15
April 26, 2010	7.27	15.4
April 23, 2010	7.71	14.3
April 22, 2010	7.82	14.4
April 21, 2010	7.93	13.9
April 20, 2010	7.91	13.7
April 19, 2010	7.93	13.3
April 16, 2010	7.85	14.2
April 15, 2010	7.24	13.6
April 14, 2010	7.2	13.4
April 13, 2010	7.42	13.5
April 9, 2010	7.94	14.7
April 8, 2010	7.65	15.1
April 7, 2010	7.94	15
April 6, 2010	7.1	14.5
April 5, 2010	7.32	14.6
April 2, 2010	7.28	12.7
April 1, 2010	7.42	12.2
March 31, 2010	8.03	10.7
March 30, 2010	7.2	10.9
March 29, 2010	8.21	10.6
March 26, 2010	7.33	12.2
March 25, 2010	7.23	12
March 24, 2010	7.69	11.6
March 23, 2010	7.61	12.1
March 22, 2010	7.15	12.7
March 21, 2010	7.11	9.6
March 19, 2010	7.25	10.7

March 18, 2010	7	10.9
March 17, 2010	7.65	9.8
March 16, 2010	7.25	10
March 15, 2010	7.08	9.8
March 14, 2010	7	10
March 13, 2010	7	10.3
March 12, 2010	7	9.8
March 11, 2010	7.06	10.4
March 10, 2010	7.23	9.7
March 9, 2010	7.53	8.1
March 8, 2010	7.18	9
March 7, 2010	7.33	7.6
March 5, 2010	7.75	7.5
March 4, 2010	7.28	8.1
March 3, 2010	7.2	8.3
March 2, 2010	7.48	8.3
March 1, 2010	6.85	8.1
February 27, 2010	7.2	8.5
February 26, 2010	6.8	8.2
February 25, 2010	6.74	8.7
February 24, 2010	6.76	8.9
February 23, 2010	6.97	8.8
February 22, 2010	7.25	9
February 21, 2010	7.09	8.9
February 20, 2010	7.03	8.4
February 19, 2010	7	8.2
February 18, 2010	7.32	7.1
February 17, 2010	7	7.7
February 16, 2010	7.4	6.2
February 13, 2010	7.26	8.4
February 12, 2010	7.3	8.9
February 11, 2010	7.26	6.2
February 9, 2010	7.43	6.9
February 8, 2010	7.46	5.2

February 5, 2010	7.45	7.1
February 4, 2010	7.08	7.5
February 3, 2010	7.59	6.7
February 2, 2010	6.6	6.7
February 1, 2010	7.73	2.8
January 28, 2010	7	3.5
January 27, 2010	7.1	8.4
January 26, 2010	7.33	7.7
January 25, 2010	6.9	7.1
January 24, 2010	6.85	7.7
January 23, 2010	6.79	5.2
January 22, 2010	7.2	6.7
January 21, 2010	7.21	6
January 20, 2010	7.15	6.3
January 19, 2010	7.64	5.9
January 18, 2010	7.57	7.3
January 17, 2010	7.55	8
January 16, 2010	7.93	9
January 15, 2010	7.48	8.6
January 14, 2010	7.56	9.5
January 13, 2010	7.95	9.9
January 12, 2010	7.8	9
January 11, 2010	7.06	9.8
January 8, 2010	7.39	9.4
January 7, 2010	7.43	10.6
January 6, 2010	7.77	9.8
January 5, 2010	7	9.5
January 4, 2010	8.07	9.5
December 30, 2009	7.23	10.1
December 29, 2009	7.1	10.4
December 28, 2009	7.2	11.2
December 27, 2009	6.96	11
December 26, 2009	7.68	8.7
December 23, 2009	7.58	8.5

December 22, 2009	7.96	8
December 18, 2009	7.22	11.5
December 17, 2009	7.9	11.7
December 16, 2009	6.75	12.4
December 15, 2009	6.71	12.7
December 14, 2009	6.88	11.1
December 11, 2009	7.37	11.9
December 10, 2009	6.96	13.7
December 9, 2009	6.51	13.1
December 8, 2009	7.1	12
December 7, 2009	7.3	11.2
December 4, 2009	7.19	13
December 3, 2009	7.19	14.3
December 2, 2009	7.65	12.8
December 1, 2009	7.42	17.4
November 30, 2009	7.48	13
November 25, 2009	7.3	15.4
November 24, 2009	7.15	15.3
November 23, 2009	7.29	14.9
November 20, 2009	7.37	16
November 19, 2009	7	15.7
November 18, 2009	7.73	15
November 17, 2009	7.05	15.7
November 16, 2009	7.22	16
November 13, 2009	7.56	15
November 12, 2009	6.7	15.2
November 11, 2009	7.41	16.1
November 10, 2009	7.84	15.4
November 9, 2009	7.15	14.9
November 8, 2009	8.16	13.3
November 5, 2009	7.02	17.5
November 4, 2009	7.15	16.3
November 3, 2009	7.25	16.5
November 2, 2009	7.33	17.4

October 30, 2009	7.23	18.3
October 29, 2009	7.11	18.4
October 28, 2009	6.98	18.3
October 27, 2009	7.35	18
October 26, 2009	7.2	17.3
October 23, 2009	7.52	17.2
October 22, 2009	7.28	15.1
October 21, 2009	7.43	15.1
October 20, 2009	7.66	15.1
October 19, 2009	7.44	14.3
October 16, 2009	7.25	17.1
October 15, 2009	7.25	18.2
October 14, 2009	7.34	19.1
October 13, 2009	7.11	19.4
October 12, 2009	8.31	17.7
October 11, 2009	7.43	19.2
October 10, 2009	7.89	20.7
October 9, 2009	7.89	19.9
October 8, 2009	7.93	19.2
October 6, 2009	7.48	19.5
October 5, 2009	7.34	19.6
October 2, 2009	7.76	19.8
October 1, 2009	7.14	19.4
September 30, 2009	7.28	20.2
September 29, 2009	6.38	20.6
September 28, 2009	6.37	21.9
September 26, 2009	7.45	21.8
September 25, 2009	7.39	21.9
September 24, 2009	7.81	22.1
September 23, 2009	8.34	21.9
September 22, 2009	7.5	21.6
September 21, 2009	7.67	22.1
September 18, 2009	8.07	21.6
September 17, 2009	7.62	21.7

September 16, 2009	7.42	22.1
September 15, 2009	7.55	21.7
September 14, 2009	8.24	20.8
September 11, 2009	7.51	21.3
September 10, 2009	7.48	21.6
September 9, 2009	6.78	21.9
September 8, 2009	7.49	21.7
September 4, 2009	7.92	21.9
September 3, 2009	7.2	21.4
September 2, 2009	7.85	20.5
September 1, 2009	7.1	21.6

Attachment 7

VA0068586 Culpeper Industrial Park WWTP - Outfall 001

Month/Year	Flow Monthly Avg (MGD)	Flow Monthly Max (MGD)	pH Minimum (S.U.)	pH Maximum (S.U.)	BOD Monthly Avg (mg/L)	TSS Monthly Avg (mg/L)	DO Minimum (mg/L)	Ammonia as N Monthly Avg (mg/L)	*E. coli* Geo Mean n/CmL
January 2013	0.009	0.020	7.0	8.1	<QL	5	7.2	<QL	
February 2013	0.011	0.024	6.7	7.5	<QL	2	7.3	<QL	
March 2013	0.013	0.018	6.7	7.6	<QL	<QL	7.0	<QL	<QL
April 2013	0.012	0.019	6.7	7.7	<QL	<QL	6.5	2.1	
May 2013	0.009	0.020	6.5	7.9	<QL	1	6.9	2.0	
June 2013	0.012	0.028	6.5	7.8	<QL	6	6.2	<QL	<QL
July 2013	0.015	0.034	6.6	7.8	<QL	<QL	6.6	<QL	
August 2013	0.011	0.019	6.8	7.8	<QL	2	6.2	0.4	
September 2013	0.007	0.012	7.0	8.2	<QL	8	6.7	0.3	<QL
October 2013	0.013	0.035	6.6	8.3	<QL	<QL	6.7	1.5	
November 2013	0.009	0.034	6.8	7.9	<QL	4	6.5	<QL	
December 2013	0.022	0.034	6.6	7.4	<QL	<QL	7.7	<QL	<QL
January 2014	0.019	0.039	6.8	8.1	5	2	7.9	<QL	
February 2014	0.025	0.036	6.8	7.5	<QL	1	7.4	<QL	
March 2014	0.020	0.034	6.6	7.3	<QL	<QL	8.1	<QL	<QL
April 2014	0.015	0.037	6.7	7.8	<QL	<QL	7.4	<QL	
May 2014	0.016	0.038	6.6	7.3	<QL	<QL	6.7	<QL	
June 2014	0.011	0.016	6.9	8.8	<QL	2	6.6	<QL	<QL
July 2014	0.009	0.016	6.9	8.2	<QL	<QL	6.2	2.8	
August 2014	0.007	0.015	7.2	8.5	13	1	6.3	0.3	
September 2014	0.005	0.019	6.9	8.2	<QL	<QL	6.2	<QL	<QL
October 2014	0.012	0.029	6.9	8.2	<QL	<QL	7.3	0.6	
November 2014	0.008	0.032	7.0	8.4	<QL	<QL	7.1	1.3	
December 2014	0.014	0.018	6.8	7.6	<QL	<QL	8.4	<QL	<QL
January 2015	0.017	0.039	6.7	8.1	<QL	<QL	9.4	0.6	
February 2015	0.014	0.018	7.0	7.7	<QL	3	10.6	<QL	
March 2015	0.013	0.019	6.7	7.4	<QL	<QL	6.7	<QL	<QL
April 2015	0.012	0.017	6.7	7.8	<QL	<QL	6.7	<QL	
May 2015	0.005	0.016	7.0	7.9	<QL	1	6.2	<QL	
June 2015	0.007	0.015	6.8	8.0	<QL	<QL	6.5	<QL	<QL
July 2015	0.011	0.018	6.9	7.6	<QL	<QL	6.5	<QL	
August 2015	0.009	0.018	7.2	8.2	<QL	<QL	6.1	<QL	
September 2015	0.007	0.018	7.1	8.0	<QL	<QL	6.5	<QL	<QL
October 2015	0.016	0.034	6.7	7.9	<QL	<QL	6.8	<QL	
November 2015	0.015	0.037	6.9	7.7	<QL	1	7.4	<QL	
December 2015	0.017	0.033	6.7	7.5	<QL	5	6.6	<QL	<QL

Attachment 8

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

David C. Dowling
Deputy Director of Soil and Water Conservation and Dam Safety

Thomas L. Smith
Deputy Director of Operations

March 7, 2016

Susan Mackert
DEQ – Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

Re: VA0068586, Culpeper County Industrial Airpark WWTP

Dear Ms. Mackert:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Rappahannock River – Mountain Run Stream Conservation Unit (SCU) is immediately adjacent to the project site. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Rappahannock River – Mountain Run SCU has been given a biodiversity significance ranking of B3, which represents a site of high significance. The natural heritage resources of concern associated with this SCU are:

Elliptio lanceolata	Yellow lance	G2G3/S2S3/SOC/NL
Aquatic Natural Community (NP-Rapidan-Upper Rappahannock Third Order Stream)		G2?/S2?/NL/NL

The Yellow lance occurs in mid-sized rivers and second and third order streams. To survive, it needs a silt-free, stable streambed and well-oxygenated water that is free of pollutants. This species has been the subject of taxonomic debate in recent years (NatureServe, 2009). Currently in Virginia, the Yellow lance is recognized from populations in the Chowan, James, York, and Rappahannock drainages. Its range also extends into Neuse-Tar river system in North Carolina. In recent years, significant population declines have been noted across its range (NatureServe, 2009). Please note that this species is currently classified as a species of concern by the United States Fish and Wildlife Service (USFWS) however, this designation has no official legal status.

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

The documented Aquatic Natural Community is based on Virginia Commonwealth University's **INSTAR** (*Interactive Stream Assessment Resource*) database which includes over 2,000 aquatic (stream and river)

collections statewide for fish and macroinvertebrate. These data represent fish and macroinvertebrate assemblages, instream habitat, and stream health assessments. The associated Aquatic Natural Community is significant on multiple levels. First, this stream is a grade B, as per the VCU-Center for Environmental Sciences (CES), indicating its relative regional significance, considering its aquatic community composition and the present-day conditions of other streams in the region. This stream reach also holds as a "Healthy" stream designation as per the INSTAR Virtual Stream Assessment (VSS) score. This score assesses the similarity of this stream to ideal stream conditions of biology and habitat for this region. Lastly, this stream contributes to high Biological Integrity at the watershed level (6^{th} order) based on number of native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species present.

Threats to the significant Aquatic Natural Community and the surrounding watershed include water quality degradation related to point and non-point pollution, water withdrawal and introduction of non-native species.

In addition, Rappahannock River has been designated by the Virginia Department of Game and Inland Fisheries (VDGIF) as a "Threatened and Endangered Species Water." The species associated with this T & E Water is the Green floater.

To minimize impacts to aquatic resources, DCR recommends the use of uv/ozone to replace chlorination disinfection and utilization of new technologies as they become available to improve water quality. Due to the legal status of the Green floater, DCR recommends coordination with the VDGIF, Virginia's regulatory authority for the management and protection of this species to ensure compliance with the Virginia Endangered Species Act (VA ST §§ 29.1-563 – 570).

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The VDGIF maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dgif.virginia.gov.

Should you have any questions or concerns, feel free to contact René Hypes at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Project Review Coordinator

CC: Ernie Aschenbach, VDGIF
Susan Lingenfelser, USFWS

Literature Cited

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: April 5, 2010).

Williams, J.D., M.L. Warren, Jr., K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of freshwater mussels of the United States and Canada. Fisheries 18: 6-9.

Attachment 9

The statistics for Ammonia are:
Number of values = 1
Quantification level = .2
Number < quantification = 0
Expected value = 10
Variance = 36.00001
C.V. = .6
97th percentile = 24.33418
Statistics used = Reasonable potential assumptions - Type 2 data

WINTER TIER
NOV 1 - APR 30
0.025 FLOW

The WLAs for Ammonia are:
Acute WLA = 10.89
Chronic WLA = 2.14
Human Health WLA = ----

The limits are based on chronic toxicity and 1 samples/month.

Maximum daily limit = 3.12991
Average monthly limit = 3.12991

DATA
10
Analysis of the Culpeper Co. Ind. Airpark effluent data for Ammonia

The statistics for Ammonia are:
Number of values = 1
Quantification level = .2
Number < quantification = 0
Expected value = 10
Variance = 36.00001
C.V. = .6
97th percentile = 24.33418
Statistics used = Reasonable potential assumptions - Type 2 data

SUMMER TIER
MAY 1 - OCT 31
0.075 FLOW

The WLAs for Ammonia are:
Acute WLA = 10.44
Chronic WLA = 1.45
Human Health WLA = ----

The limits are based on chronic toxicity and 1 samples/month.

Maximum daily limit = 2.120734
Average monthly limit = 2.120733

DATA
10

Attachment M

4/22/2011 10:26:53 AM

Facility = Culpeper Co Ind Airpark WWTP .025 MGD
Chemical = Ammonia as N (Nov-Apr)
Chronic averaging period = 30
WLAa = 10
WLAc = 2.7
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 5.44770925222404
Average Weekly limit = 5.44770925222404
Average Monthly LImit = 5.44770925222404

The data are:

9

4/22/2011 10:25:52 AM

Facility = Culpeper Co Ind Airpark WWTP .025 MGD
Chemical = Ammonia as N - Annual
Chronic averaging period = 30
WLAa = 10
WLAc = 1.7
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 3.43003915880773
Average Weekly limit = 3.43003915880773
Average Monthly LImit = 3.43003915880773

The data are:

9

4/21/2011 7:49:52 AM

Facility = Culpeper Co Industrial Airpark WWTP .025 MGD
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.011
Q.L. = .1
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = .2
Variance = .0144
C.V. = 0.6
97th percentile daily values = .486683
97th percentile 4 day average = .332758
97th percentile 30 day average= .241210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245855E-02
Average Weekly limit = 9.59676626920106E-03
Average Monthly LImit = 7.9737131838758E-03

The data are:

0.2

Attachment 10

Attachment 7

MEMORANDUM

State Water Control Board

2111 North Hamilton Street | P. O. Box 11143 | Richmond, VA. 23230

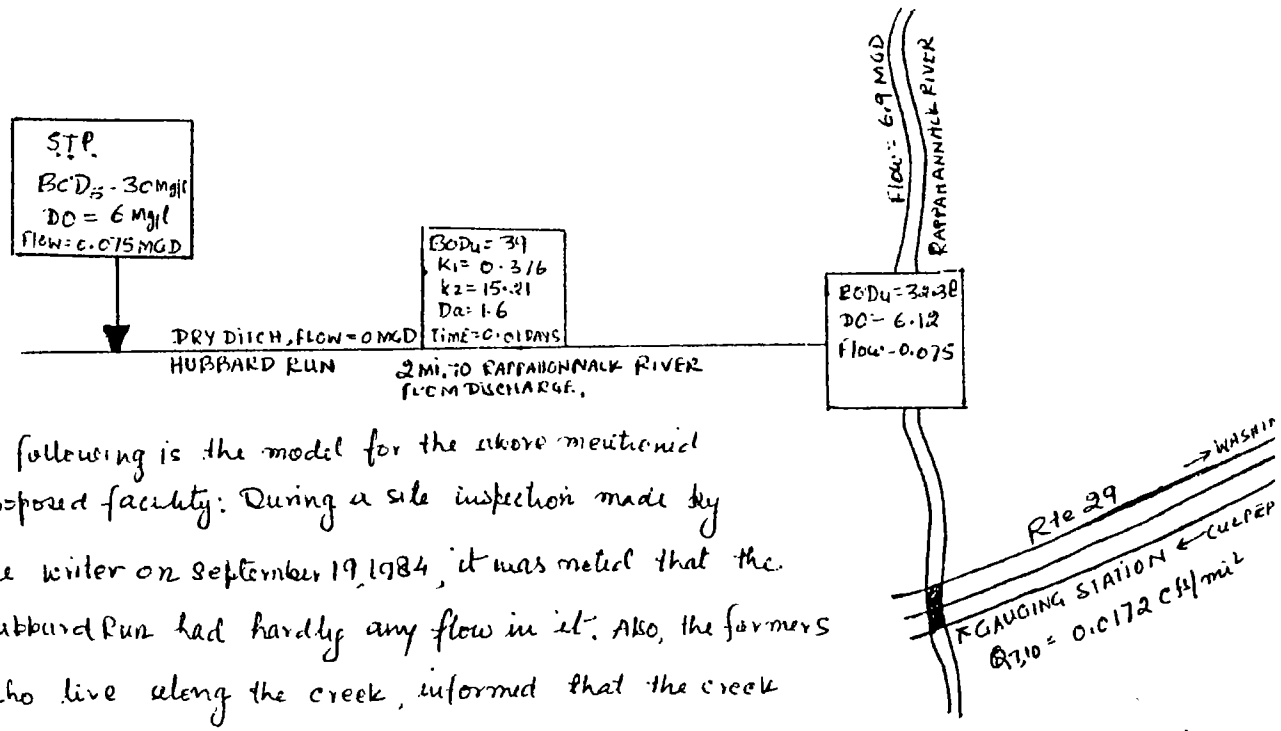
SUBJECT: Commonwealth Utilities, Culpeper County.

TO: Permit file

FROM: Rajeev Railan NRO.

DATE: September 21, 1984

COPIES: Basin file (Gary's office), D. Phillips (BWCM)



The following is the model for the above mentioned proposed facility: During a site inspection made by the writer on September 19, 1984, it was noted that the Hubbard Run had hardly any flow in it. Also, the farmers who live along the creek, informed that the creek dries out completely in the summer. So it was considered as a dry ditch with no flow for modeling purpose. The proposed facility has a design flow of 0.075 MGD and it is a package treatment plant consisting secondary treatment using extended aeration - activated sludge process.

The $BOD_{ultimate}$ for the STP was assumed as 39 mg/l and DO = 6 mg/l. STP flow and dry ditch flow were mass balanced, and K_1, K_2 rates were computed. Da based upon 6 mg/l of DO, was computed as 1.6 and time, based upon 2 mi distance was computed as 0.01 days. The drainage area for the Hubbard Run was 4 sq. mi. After 2 miles, at the point where the flow of Hubbard Run (STP flow) would be discharged into Rappahannock River, it was noted that the quality of flow improved, since BOD_u went down to 3.2-3.8 mg/l and DO went up to 6.12 mg/l.

(cont.)

MEMORANDUM

State Water Control Board

2111 North Hamilton Street | P. O. Box 11143 | Richmond, VA. 23230

SUBJECT: Commonwealth Utilities. (continued)

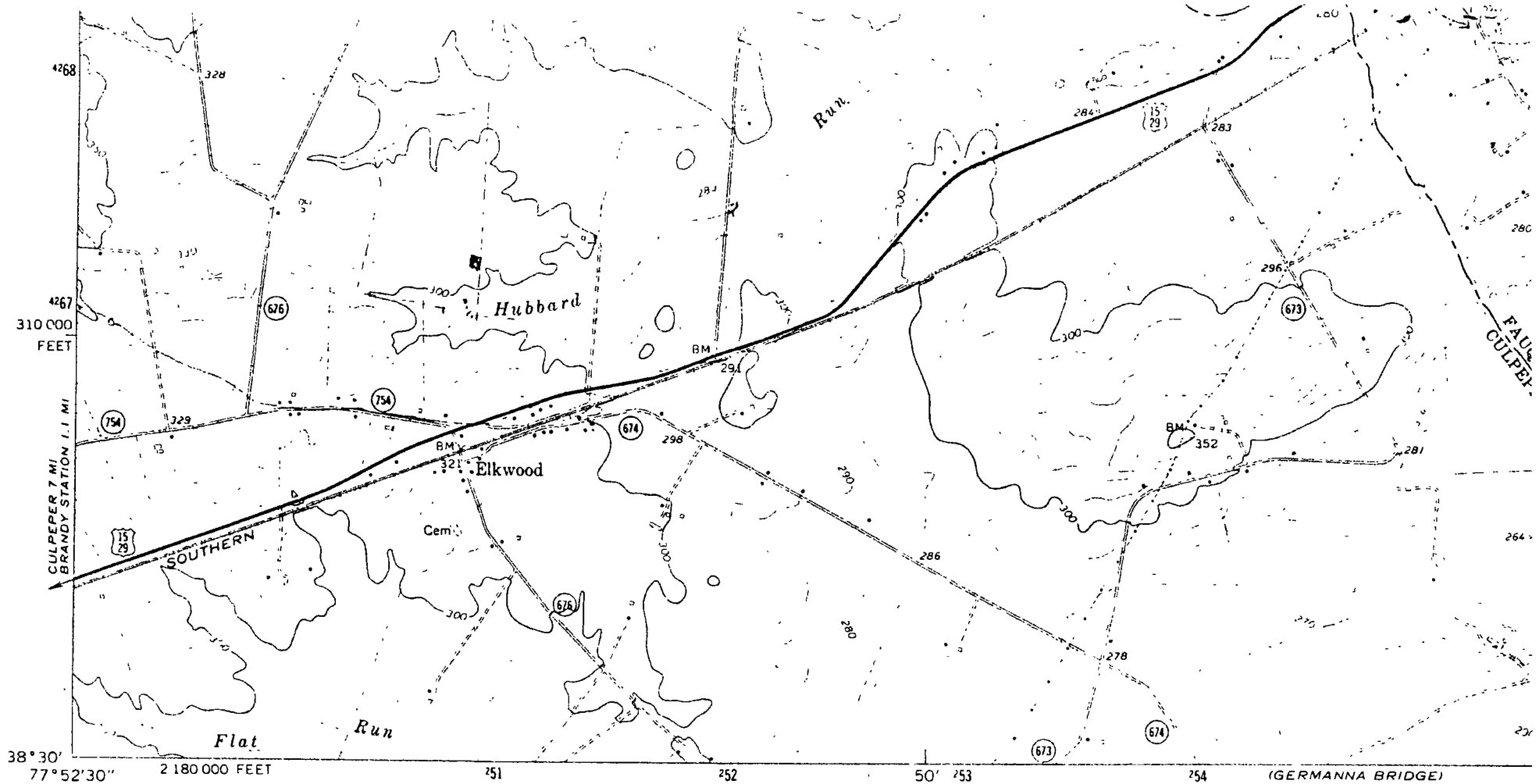
TO:

FROM:

DATE:

COPIES:

Since the flow ratio of the Rappahannock River and Hubbard Run is 92:1, no further analysis or modeling was done, specially since the water quality improved during the 8mile run.



(GERMANNA BRIDGE)
5460 IV NE

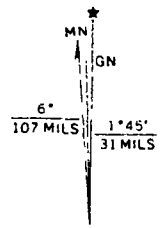
Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and USCE

Topography by photogrammetric methods from aerial photographs taken 1966. Field checked 1966

Polyconic projection 1927 North American datum
10,000-foot grid based on Virginia coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks,
zone 18, shown in blue

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked



UTM GRID AND 1966 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1 24 000

1000 0 1000 2000 3000 4000 5000

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STAI

FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON
AND VIRGINIA DIVISION OF MINERAL RESOURCES, CHARLOTTES'
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAIL

Chlorine Modification Statement of Basis

Permit No. VA0068586 Culpeper Co. Ind. Airpark STP
Outfall No. 001
Design Flow 0.025 MGD:

Mass Balance Calculation for Chlorine Residual

Q_r = 7Q10 of receiving stream = $\dfrac{(\_\_\_\_\_ in2)\ (\_\_\_\_\_ cfs/mi^2)}{(6.97)\ (1.547)}$

dry ditch

Qr = 0 MGD

Q_w = Design flow of the STP = 0.025 MGD

C_w = Chlorine limitation of the discharge (Maximum allowable to protect water quality)

C_o = Chlorine instream value (Water Quality Standard) = 0.011 mg/l

$$C_w = \frac{(Q_r + Q_w)\ (C_o)}{Q_w} = \frac{(0 + 0.025)(0.011)}{0.025}$$

C_w = 0.011 mg/l = nondetect

If the use of a C_o of 0.011 mg/l results in a C_w value of greater than or equal to 2.0 mg/l, then the standard chlorine range of 1.0 - 2.0 mg/l with excursions and a restrictive tech. max. value should be used in the permit.

10/89

Attachment 11

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Culpeper County, Virginia.

PUBLIC COMMENT PERIOD: May 16, 2016 to June 15, 2016

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Culpeper County, 118 West Davis St, Ste 101, Culpeper, VA 22701, VA0068586

NAME AND ADDRESS OF FACILITY: Culpeper Industrial Airpark WWTP, 13281 Airpark Dr, Culpeper, VA 22701

PROJECT DESCRIPTION: Culpeper County has applied for a reissuance of a permit for the public Culpeper Industrial Airpark WWTP. The applicant proposes to release treated sewage wastewaters from the light industrial and sanitary wastewaters at a rate of 0.025 million gallons per day into a water body with future expansion to 0.0395 and 0.10 million gallons per day. The sludge will be disposed by pump and haul to an approved facility. The facility proposes to release the treated wastewaters in the Hubbard Run in Culpeper County in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD, cBOD, Total Residual Chlorine, Total Suspended Solids, Dissolved Oxygen, Ammonia as N, *E. coli*, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus. The permit requires monitoring for flow and Nitrate+Nitrite.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Alison Thompson
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3834 E-mail:Alison.Thompson@deq.virginia.gov